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COSTS OF PRODUCING SELECTED CROPS IN THE UNITED STATES—1977, 1978, AND PROJECTIONS FOR 1979

PREPARED BY THE

ECONOMICS, STATISTICS, AND COOPERATIVES SERVICE
U.S. DEPARTMENT OF AGRICULTURE

FOR THE

COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY
UNITED STATES SENATE

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FOREWORD

This is the fourth annual report by the U.S. Department of Agriculture on the cost of producing selected commodities as required by Public Law 93–86, the Agriculture and Consumer Protection Act of 1973.

This report covers 1977 and 1978 costs, and projections for 1979 crops. Total costs, including variable, machinery ownership, overhead, management, and land are computed and presented on both a per planted acre and on a per unit yield basis. Land costs are computed in two different ways; both composites. One composite uses current land values combined with share and cash rent, while the other uses an average acquisition value combined with share and cash rent.

The report is similar to previous ones, but there are some changes. There is a new section in the tables showing a total cost of production for farmers who rent their farmland. The procedure for calculating management costs has been changed. The costs are now computed as a specified percentage of the sum of the variable, machinery ownership, and general farm overhead costs. The third change is the elimination of cost projections for regions. The Department did not have sufficient information to make projections on a regional basis this year. The data presented herein are important for the Congress and the administration as a tool in our ongoing efforts to provide economic security to our farmers and price stability to our consumers.

This report does not necessarily represent the opinions of all of the members of the Committee on Agriculture, Nutrition, and Forestry.

HERMAN E. TALMADGE, *Chairman.*

LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D.C., April 30, 1979

Hon. HERMAN E. TALMADGE,
Chairman, Committee on Agriculture, Nutrition, and Forestry,
U.S. Senate, Washington, D.C.

Dear Mr. CHAIRMAN: The U.S. Department of Agriculture, through its Economics, Statistics, and Cooperatives Service, submits its annual report on costs of production for selected crops in the United States. The report contains detailed summaries of regional and national weighted average costs per acre and per unit of production for 10 important crops. Final cost estimates are provided for 1977, preliminary estimates for 1978, and projected estimates for 1979.

In reviewing the report, you will notice that, in 1978, the per acre costs of production for 9 of the 10 crops increased—with the average rate of increase for the 10 crops being slightly less than the overall rate of inflation. As a result of good yields for most crops, however, per unit costs remained the same for wheat and decreased for corn, barley, peanuts, and flax. Input costs that increased the most were for machinery and fuel.

The projections for 1979 anticipate a higher rate of increase for 1979 over 1978 on a per acre basis compared with the 1977 to 1978 increases. Per unit costs will depend on yields. However, on a trend basis, yields would be down for seven crops in 1979 and up only for cotton, rice, and peanuts.

The report is similar to previous ones, but there are some changes which I want to explicitly note. We have added a new section in the tables showing a total cost of production for farmers who rent their farmland. A renter must provide a share of the crop or a cash payment to gain use of the land. The procedure for calculating management costs has been changed.

These costs are now computed as a specified percentage of the sum of the variable, machinery ownership, and general farm overhead costs. This procedure relates the management allocation to the amount of inputs managed. A third change is the elimination of cost projections for regions. We have insufficient information at the time projections are made to be able to make projections on a regional basis. These changes are more fully explained in the report.

Sincerely,

HOWARD W. HJORT,
Director of Economics,
Policy Analysis and Budget.

PREFACE

The U.S. Department of Agriculture (USDA) conducts a comprehensive program of research on costs of production through the Commodity Economics Division (CED) of the Economics, Statistics, and Cooperatives Service (ESCS). The work is coordinated by a costs of production board consisting of the program leaders of CED's commodity groups.

The costs shown here are average estimates, but the broad range of costs which they encompass should not be overlooked as an important factor in the cost structure of U.S. agricultural production. Costs vary significantly over time, from farm to farm, and across States and regions. This variability among farms is attributable to such factors as climate, soil types, and varying management skills of producers. The size of farm is also an important factor, as some operators achieve efficiencies through purchasing large quantities of inputs at a discount, using resources—especially machinery—more efficiently, and securing more advantageous marketing arrangements. It is also necessary to use these costs with the understanding that they do not provide information that distinguishes between tenure situations of different debt situations. The cost estimates are based on total cost accounting for all inputs. The annual receipts and expenditures, often of most concern to individual operators, are not specifically broken out.

Data for the costs of producing crops—based on planted acres—come from a variety of sources, the primary source being the 1974 survey of more than 4,000 producers. The peanut costs are based on a 1978 survey of 750 peanut producers in 6 States. Many other units in ESCS and across USDA contribute data and information. The firm enterprise data system—FEDS—provides the means through which the data and information are processed and evaluated. Numerous people in the land-grant universities contribute to the effort and review enterprise budgets before they are published. The CED commodity program areas are responsible for the final estimates for their respective commodities.

A large-scale enumerative survey of major crops is now underway. ESCS will be contacting about 7,000 farmers across the United States for personal interviews to ask about their input use, crop operations, and machinery and equipment use. The data from this survey will be incorporated into next year's report.

Earlier cost of production reports include:

Costs of Producing Selected Crops in the United States, 1974. Prepared by the Economic Research Service, U.S. Department of Agriculture,

NOTE ON COMPARABILITY OF ANNUAL REPORTS:

A nationwide enumerative survey of producers of the crops included in this report is being conducted in March and April of this year to obtain data on which to determine 1978 costs. Data will be collected from 7,000 farmers to provide current information on cropping practices, input use and machinery. This new information will then serve as the primary data source for subsequent updates and cost of production reports. The preliminary 1978 cost estimates shown in this report will thus be revised in the 1980 report on the basis of this new information.

The USDA cost estimates are based on the latest and most accurate information available at the time of estimation. Users of USDA cost of production information should be aware that when a completely new information base becomes available a discontinuity in cost trends between annual reports is possible.

Senate Committee on Agriculture and Forestry, Committee Print 63–092, January 1976.

Costs of Producing Selected Crops in the United States, 1974. A Summary. ERS–620, Economic Research Service, U.S. Department of Agriculture, December 1975.

Krenz, Ronald, et al. "Costs of Producing Major Crops: Easing in 1976," in *Agricultural Outlook.* Economic Research Service, U.S. Department of Agriculture, April 1976.

"Cost of Production Self-Calculator Guide," in *Agricultural Outlook.* Economic Research Service, U.S. Department of Agriculture, May 1976.

Walter, Alan S., and Gail D. Garst. "Costs of Production for Soybeans, Peanuts and Flaxseed for 1974, 1975 and 1976," in *Fats and Oils Situation.* Economic Research Service, U.S. Department of Agriculture, April 1976.

Cost of Producing Milk in the United States, 1974. Prepared by the Economic Research Service, U.S. Department of Agriculture. Senate Committee on Agriculture and Forestry, Committee Print, 72–184, June 1976.

Costs of Producing Food Grains, Feed Grains, Oilseeds, and Cotton, 1974–76. AER–338. Economic Research Service, U.S. Department of Agriculture, June 1976.

Costs of Producing Selected Crops in the United States—1975, 1976, and Projections for 1977. Prepared by the Economic Research Service, U.S. Department of Agriculture. Senate Committee on Agriculture and Forestry, Committee Print 80–606, January 1977.

Costs of Producing Milk in the United States, 1975 and 1976. Prepared by the Economic Research Service, U.S. Department of Agriculture. Senate Committee on Agriculture, Nutrition, and Forestry. Committee Print 83–252, February 1977.

Hoff, Frederic L. *Sugarbeet Production Costs in the United States—1976–77 Crop,* ESCS–08, Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture, February 1978.

Costs of Producing Selected Crops in the United States—1976, 1977, and Projections for 1978. Prepared by the Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture. Senate Committee on Agriculture, Nutrition, and Forestry, Committee Print 24–607, March 1978.

Costs of Producing Hogs in the United States—1976. Prepared by the Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture. Senate Committee on Agriculture, Nutrition, and Forestry, Committee Print 25–503, April 1978.

Costs of Producing Milk in the United States—Final 1976, Estimated 1977, and Projections for 1978. Prepared by the Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture. Senate Committee on Agriculture, Nutrition, and Forestry, Committee Print 25–504, April 1978.

Grise, Verner N. "Cost of Producing Burley Tobacco: 1976–78 and Projected 1979," in *Tobacco Situation.* Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture, December 1978.

Preparation of the report was under the direction of Ronald D. Krenz, CED, ESCS, stationed at Oklahoma State University. Other staff of the firm enterprise data system assisting in the report preparation were Gail Garst, Charles Micheel, and David Fawcett. Warren Grant, Troy Mullins, and Shelby Holder, Jr., also contributed.

SUMMARY

Per acre production costs—excluding land costs—for 10 major U.S. crops increased an average 6.2 percent in 1978 (table 1). Barley registered the largest increase at 10 percent, while cotton costs decreased just over 1 percent. Rising machinery and fuel costs were the major causes of the production-cost increases. The decrease in cotton costs is attributed both to a decrease in chemical and fertilizer applications and to reduced ginning costs due to lower cotton yields.

Yields per planted acre were good in 1978 for all crops except cotton. Cotton yields dropped 23 percent from 1977 levels and were the lowest since 1957. Record yields were set for corn, barley and peanuts. Yields for flaxseed and wheat were above yields in the most recent years. Soybean and grain sorghum yields were down slightly from excellent yield levels in 1977.

The average costs per unit of production (excluding land costs) increased 5 percent in 1978. There was little difference between average per acre and average per unit cost increases. Differences were considerably more pronounced for individual crop per unit costs as compared to the individual per acre costs. Per unit costs were up 23 percent for cotton, 18 percent for oats, 13 percent for grain sorghum, 11 percent for soybeans, and 2 percent for rice. Those increases were partially offset by declines in the per unit costs for other crops: 8 percent for corn, 7 percent for flaxseed, 5 percent for barley, and 2 percent for peanuts. In every case, the declines were due to increases in the yield per acre. Wheat costs remained unchanged.

Relative changes in total per unit costs for renters paralleled 1977 to 1978 changes in per unit nonland costs.

Rising production costs per planted acre are expected for all 10 major U.S. crops in 1979. The increases are projected to be 9 percent for barley, oats, and flaxseed; 8 percent for wheat, sorghum, cotton, and soybeans; and 7 percent for rice, corn, and peanuts.

At trend yields, only cotton, rice, and peanut yields would be higher in 1979 than in 1978. Cotton and rice yields would increase 16 and 2 percent, respectively, while the peanut yield would be about the same. Yields would decrease 15 percent for flaxseed, 10 percent for barley, 9 percent for corn, 5 percent for oats, 3 percent for wheat, 2 percent for grain sorghum, and just less than 2 percent for soybeans.

Trend yields coupled with increasing per acre costs would mean overall per unit cost—excluding land costs—increases greater than per acre cost increases. At trend yields, only cotton would have lower per unit nonland costs in 1979 compared with 1978, decreasing about 9 percent. Per unit cost increases would be 28 percent for flaxseed, 21 percent for barley, 17 percent for corn, 15 percent for oats, 12 percent for wheat, 11 percent for grain sorghum, 10 percent for soybeans, 7 percent for peanuts, and 4 percent for rice.

A discussion of limitations and interpretation of cost of production estimates uses 1978 costs of corn to illustrate situations and interpretations that are not made explicit using average cost concepts. Residual returns to corn land range from 3.7 percent to 18.4 percent depending on whether land has just been purchased or was purchased 20 years ago. If postponable and nonpostponable cost concepts are considered, cash returns exhibit widely different levels depending on debt and tenure situations.

45-071—79——2

TABLE 1.—SUMMARY OF U.S. AVERAGE PER PLANTED ACRE AND PER UNIT PRODUCTION COSTS, MAJOR CROPS, 1977–79

	Corn (bushels)			Sorghum (bushels)			Barley (bushels)			Oats (bushels)		
	1977 (final)	1978 (preliminary)	1978 (projected)	1977 (final)	1978 (preliminary)	1979 (projected)	1977 (final)	1978 (preliminary)	1979 (projected)	1977 (final)	1978 (preliminary)	1979 (projected)
Per planted acre:												
Variable	$96.41	$98.27	$102.72	$54.18	$57.86	$61.12	$41.44	$44.11	$47.08	$26.29	$27.78	$29.31
Machinery ownership	27.59	31.88	36.32	26.54	30.87	35.15	20.07	23.73	27.07	17.16	19.71	22.47
Overhead	9.64	10.25	11.02	6.26	6.67	7.17	6.16	6.56	7.05	4.96	5.36	5.76
Management	13.36	14.04	15.00	8.70	9.54	10.34	6.77	7.44	8.12	4.84	5.29	5.75
Total	147.00	154.44	165.06	95.68	104.94	113.78	74.44	81.84	89.32	53.25	58.14	63.29
Land:												
Current	78.41	86.61	92.59	35.27	37.04	39.60	39.75	44.82	47.91	50.02	53.69	57.39
Acquisition	47.56	53.78	57.49	22.56	23.94	25.59	21.81	24.66	26.36	24.71	25.83	27.61
Per unit:												
Variable	1.09	.97	1.06–1.18	1.00	1.10	1.10–1.29	1.04	.97	1.09–1.20	.49	.56	.58–.68
Machinery ownership	.31	.32	.37–.42	.49	.59	.64–.75	.51	.52	.63–.69	.32	.39	.44–.52
Overhead	.11	.10	.11–.13	.12	.13	.13–.15	.16	.14	.16–.18	.09	.11	.11–.13
Management	.15	.14	.16–.17	.16	.18	.19–.22	.17	.16	.19–.21	.09	.11	.11–.13
Total	1.66	1.53	1.70–1.90	1.77	2.00	2.06–2.41	1.88	1.79	2.07–2.28	.99	1.17	1.24–1.46
Land:												
Current	.88	.86	1.01	.65	.71	.77	1.00	.98	1.16	.93	1.08	1.22
Acquisition	.54	.53	.62	.42	.46	.50	.55	.54	.64	.46	.52	.58
Average renter cost	2.44	2.27	2.67	2.49	2.81	3.11	2.76	2.64	3.20	1.67	1.94	2.23
Yield	88.8	101.0	87.1–97.1	54.1	52.5	47.3–55.3	39.6	45.8	39.2–43.2	53.8	49.9	43.2–51.2

	All wheat (bushels)			Cotton (pounds)			Rice (hundredweight)		
	1977 (final)	1978 (preliminary)	1979 (projected)	1977 (final)	1978 (preliminary)	1979 (projected)	1977 (final)	1978 (preliminary)	1979 (projected)
Per planted acre:									
Variable	$37.24	$37.64	$39.69	$168.21	$162.54	$172.65	$230.35	$234.22	$245.59
Machinery ownership	18.69	22.19	25.30	58.62	60.57	68.69	48.02	53.80	61.27
Overhead	6.16	6.55	7.04	10.95	11.74	12.62	19.44	21.98	23.63
Management	6.21	6.64	7.20	23.78	23.49	25.40	29.78	31.00	33.05
Total	68.30	73.02	79.23	261.56	258.34	279.36	327.59	341.00	363.54
Land:									
Current	38.25	43.68	46.69	52.66	54.33	58.08	84.05	80.79	86.36
Acquisition	20.97	25.07	26.80	37.06	37.19	39.76	61.30	57.36	61.32

Per unit:									
Variable	1.34	1.27	1.29–1.48	.333	.418	.345–.431	5.21	5.20	5.17–5.52
Machinery ownership	.68	.75	.82–.95	.116	.156	.137–.171	1.09	1.19	1.29–1.38
Overhead	.22	.22	.23–.26	.022	.030	.025–.032	.44	.49	.50–.53
Management	.22	.22	.23–.27	.047	.060	.051–.063	.67	.69	.69–.74
Total	2.46	2.46	2.57–2.96	.518	.664	.558–.697	7.41	7.57	7.65–8.17
Value of byproducts	.06	.06	.06	.056	.094	.100	[1] NA	NA	NA
Land:									
Current	1.38	1.47	1.62	.104	.140	.129	1.90	1.79	1.88
Acquisition	.76	.84	.93	.073	.096	.088	1.39	1.27	1.33
Average renter cost	3.64	3.62	4.04	.625	.803	.749	9.31	9.68	10.03
Yield	27.7	29.7	26.8–30.8	505	389	401–501	44.23	45.05	44.5–47.5

	Soybeans (bushels)			Peanuts (pounds)			Flaxseed (bushels)		
	1977 (final)	1978 (preliminary)	1979 (projected)	1977 (final)	1978 (preliminary)	1979 (projected)	1977 (final)	1978 (preliminary)	1979 (projected)
Per planted acre:									
Variable	$52.82	$54.17	$56.86	$257.95	$264.50	$278.20	$26.36	$27.33	$29.04
Machinery ownership	24.28	27.46	31.28	51.21	58.07	66.25	17.00	19.51	22.24
Overhead	6.40	6.86	7.38	15.73	17.52	18.84	4.83	5.13	5.52
Management	8.35	8.85	9.55	32.49	34.01	36.33	4.82	5.20	5.68
Total	91.85	97.34	105.07	357.38	347.10	399.62	53.01	57.17	62.48
Land:									
Current	77.11	81.04	86.63	99.78	110.48	118.10	28.13	32.23	34.45
Acquisition	51.79	54.15	57.89	90.68	100.65	107.59	15.12	18.15	19.40
Per unit:									
Variable	1.75	1.87	1.87–2.15	.106	.102	.101–.113	2.46	2.20	2.50–3.03
Machinery ownership	.80	.95	1.03–1.19	.021	.022	.024–.027	1.59	1.57	1.92–2.32
Overhead	.21	.24	.24–.28	.007	.007	.007–.008	.45	.42	.48–.57
Management	.28	.31	.32–.36	.013	.013	.013–.015	.45	.42	.49–.59
Total	3.04	3.37	3.46–3.98	.147	.144	.145–.163	4.95	4.61	5.39–6.51
Value of byproducts	NA	NA	NA	.005	.005	.005	NA	NA	NA
Land:									
Current	2.55	2.80	3.05	.041	.043	.045	2.63	2.60	3.25
Acquisition	1.71	1.87	2.04	.037	.039	.041	1.41	1.46	1.83
Average renter cost	4.79	5.32	5.83	.194	.195	.208	7.34	6.87	8.81
Yield	30.2	28.9	26.4–30.4	2,431	2,596	2,450–2,750	10.7	12.4	9.6–11.6

[1] Not applicable.

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INTRODUCTION

Production costs in 1978 increased an average 6.2 percent per planted acre over 1977. Only cotton had lower per acre nonland costs in 1978 than in 1977. All crops but cotton, grain sorghum, oats, and soybeans had higher yield levels in 1978. The higher yields were sufficient to offset increased per acre costs so that corn, barley, peanuts, and flaxseed had lower per unit costs. There was no change in per unit costs of producing wheat.

The Economics, Statistics, and Cooperatives Service (ESCS) of the U.S. Department of Agriculture (USDA) annually prepares estimates of the costs of producing the major agricultural commodities. This report contains estimates of production costs for 10 major crops for the years 1977, 1978, and 1979. Estimates in this report for 1977 are considered to be final estimates, estimates for 1978 are preliminary, and those for 1979 are projected. Farm production costs are of interest to producers concerned with adequate returns to their labor and investment. Consumers are concerned with production costs as they affect retail food price levels. Public policymakers, concerned with the welfare of producers and consumers alike, view production costs as important economic indicators.

Some changes were made from the earlier reports. A new section was added in the tables for the individual crops to show total costs of production for renters, who must give a share of the crop or make an annual cash rental payment in order to use the land. The new tables show the renters' bottom line costs to give a better perspective of the cost situation faced by these operators.

Management costs are now based on a fixed percentage of the total of variable costs, machinery ownership costs, and general farm overhead costs, thereby relating management to the amount of inputs managed. In earlier reports, management had been based on the gross receipts per acre. The management charge, therefore, varied in direct relation to yields and prices, even though managers did not manage less because weather was unfavorable or because prices were depressed.

The regional cost projections, which would have been for 1979 in this report, were eliminated. At the time the projections are developed, ESCS does not yet have sufficient information to make a unique projection for each region. In earlier reports, the regional projections had been proportional to the U.S. projections.

PROCEDURES

The Economic Research Service (ERS—now part of ESCS) undertook a program in 1973 to provide consistent cost estimates for the major agricultural commodities in all production regions of the United States. The ERS costs of production survey for 1974 constitutes one of the major sources of information in the continuing

program. Such surveys, however, are extremely expensive and time consuming and entail a considerable timelag from the end of the production period surveyed until the data are available. The survey of 1974 production costs, for example, was conducted in early 1975 and the results were published in January 1976.[1] Primarily for those reasons, ERS implemented in 1973 a supplemental cost-estimating procedure known as the Firm Enterprise Data System (FEDS), which is a series of computerized crop enterprise budgets that are updated and produced by a set of budget generators and aggregation programs.[2]

The primary objectives of the FEDS procedure are to provide annual updates of the cost estimates between the years when surveys are taken and to provide projections of costs for the upcoming crop year. FEDS thereby enables cost estimates to be prepared more frequently and with less expense than would be possible by relying solely on formal surveys. Producers of major crop commodities are surveyed every 4 years on a rotational schedule to provide data to update and supplement the FEDS cost-estimating procedure.

Use of FEDS was initiated by developing crop enterprise budgets for 1974 for 10 crops. In general, one crop budget was developed for each major producing State. However, in States where different production technologies (such as irrigation and summer fallow) are used, additional budgets were developed for each major technology. The budgets for cotton, corn, grain sorghum, barley, wheat, soybeans, and flaxseed were constructed using basic data obtained from the ERS cost of production survey for 1974. Thus, the budgets represent 1974 practices in terms of machinery types and sizes and operations performed. The peanut budgets are based on a cost of production survey of the 1977 peanut crop taken in 1978. No surveys have been made of the cost of production for rice or oats. Budgets for oats and rice were developed by the FEDS staff and analysts in the field staff of CED's grains and feed program, plus assistance from experiment station and extension service staff in the rice-producing States.

This report is the fourth in an ongoing series of cost estimates and the third to treat a 3-year period. Reports are issued annually, dropping a past year and adding a future one. The number of budgets used to estimate costs for each crop is as follows:

Crop:	*Number of budgets*
Cotton	18
Corn	27
Grain sorghum	17
Barley	17
Wheat:	
Durum	6
Spring	8
White	9
Soft Winter	12
Hard Winter	26
Soybeans	22
Peanuts	9
Flaxseed	3
Oats	13
Rice	7

[1] "Costs of Producing Selected Crops in the United States, 1974," Committee Print No. 63-092, Senate Committee on Agriculture and Forestry, January 1976.

[2] The FEDS system of budgets and cost-estimating procedures is operated by ESCS staff stationed at Oklahoma State University. In addition to the enterprise budgets that annually update the national and regional weighted average costs, FEDS also develops research budgets, also updated annually, based on similar procedures but for smaller production areas. The research budgets are available upon request in printed form for specific areas of the country. Requests for these budgets should be directed to Ronald D. Krenz, Department of Agricultural Economics, Oklahoma State University, Stillwater, Okla. 74074.

These 194 budgets were processed by a redesigned version of the Oklahoma budget generator.[3] Sets of budgets were developed to represent regional and national costs for 1977 and 1978. National projections only are made for 1979, based on the national estimates for 1978 and expected changes in 1979.

The budgets include variable costs, machinery ownership costs, and general farm overhead costs. Variable costs include expenditures for seed, fertilizer, chemicals, custom operations, labor, fuel and lubricants, repairs, interest, crop drying, and miscellaneous items. Machinery ownership costs include charges for replacement, interest, insurance, and taxes. General farm overhead includes costs for recordkeeping, utilities, general farm maintenance, and similar items that are difficult to allocate to a specific enterprise.

Two additional cost components, management and land, are also reported. The management charge is computed as 10 percent of the estimated variable, machinery ownership, and general farm overhead costs.[4]

The land allocations are composite charges; they are computed by weighting owner-operated, share-rented, and cash-rented land charges represented in the same proportions for each crop as reported in the 1974 survey.[5] The owned-land allocation is computed using data obtained from surveys reported in *Farm Real Estate Market Developments*.[6] Data on cropland values for 1977 by crop-reporting districts were weighted by crop acreages in these districts to arrive at a separate land value for each crop for each State. The land value derived in this way is then multiplied by the annual average interest rate charged for real estate loans by the Federal Land Bank to give an annual allocation. Average farm real estate taxes are added to the owned-land estimate.[7]

Share rent is estimated using the average share rentals paid for each crop in each State less the share of costs for seed, fertilizer, chemicals, ginning, crop drying, irrigation, and custom work paid by the landlord as reported in the 1974 survey.

Cash rent is estimated by using the 1974 survey as a base, indexed to reflect current values by the index of rents reported by ESCS.[8]

The average acquisition allocation represents an estimate of the value of land at the time of acquisition.[9] The average acquisition

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[3] The original Oklahoma budget generator was developed by Rodney L. Walker and Darrel D. Kletke. For a discussion of the most recent version, see Kletke, Darrel D., "Operations Manual for the Oklahoma State University Enterprise Budget Generator." Research Report P-179, Oklahoma State University, June 1975.

[4] This is the first time that method has been used. In earlier reports, the management charge was computed as 7 percent of the value of the crop. That method made part of the cost of production estimate dependent upon the product's price. As a result, the cost of production estimate would vary with variations in the product's price. The 10-percent-of-cost method should give estimates roughly equal to the old 7-percent-of-receipts method. The new method is based on the assumption that the management required is related to the quantity of resources used in production.

[5] This method of land charge determination applies to all crops examined here except rice. For rice, only the owner-operated and share-rented land charge methods were used in the composite land allocation.

[6] "Farm Real Estate Market Developments," CD-83, Econ., Statis., and Coop. Serv., U.S. Department of Agriculture, July 1978.

[7] "Farm Real Estate Taxes—1976", RET-17, Econ. Res. Serv., U.S. Department of Agriculture, December 1977.

[8] "Farm Real Estate Market Developments," CD-83, op. cit.

The method of computing the average acquisition value is detailed in the 1974 report. Basically, it is as ollows. Approximately 3 percent of the farmland is sold each year. Theoretically, all land would, therefore, change ownership over a 35-year period. The average of State per-acre cropland values over the period 1940 to 1974 was determined by State. This average was divided by the 1974 State cropland value to obtain an index for each State. To determine the estimated acquisition value of the cropland on each farm, this State index was multiplied by the reported value of agricultural cropland for each State.

value was used for the owned-land component to compute the composite allocation at acquisition value.

For the first time, costs of production for a share renter, a cash renter, and a weighted-average renter are included. The share renter's cost is obtained by subtracting any costs that landowners pay on share arrangements from total nonland costs to get an estimate of the share renter's net cost. The share renter's net cost is divided by the renter's share of the crop to get a cost per unit. In the case of the cash renter, the cash rent is added to the nonland cost and divided by the total yield to get the cash renter's per unit cost. These two estimates are weighted, based on the 1974 tenure arrangements, to get a weighted average renter cost of production.

Yields can be determined on either a planted acre or a harvested acre basis; throughout this report, the costs were determined on a planted acre basis using planted acre yields. Planted acre yields are determined by dividing total production by the acreage planted. The costs include all the operations for the full acre: The preplant tillage, the planting, postplant tillage, and any chemical applications. With the use of planted acre yields, actual costs per unit produced are more accurately reflected.[10] Harvested acre yields will be greater than or equal to planted acre yields and are determined by dividing total production by the acreage harvested. When costs were determined on a harvested acre basis, the costs of tilling and planting those acres not harvested were often omitted.

Converting planted acre costs to harvested acre costs requires separating harvesting costs from all other costs and estimating the proportion of the planted acre that is harvested. Such data have not been provided in this report, but are available from the authors of this report for each crop for each State.

Costs of custom operations include costs for custom harvesting and custom application of chemicals and fertilizers. In some cases, these custom charges include costs of chemicals applied. The custom charges do not represent 100 percent custom harvesting or custom application of materials. The percentages of corn, soybeans, grain sorghum, and other small grains harvested by custom methods were obtained from the 1976 ERS economic survey. The percentage of custom-harvested peanuts was obtained from the 1977 survey. The percentages for all other custom operations were obtained from the 1974 ERS costs of production survey.

A new set of custom rate charges was estimated for 1977 using data from several sources, primarily publications of the various State crop-reporting services and State experiment stations and extension services.

DATA FOR 1977

The 1977 budgets for all crops except peanuts were based on machinery types, sizes, and operations performed data obtained from the 1974 ERS study. The peanut budgets were based on the survey of 1977 production practices. The data on the quantities of fertilizer used were taken from the ERS *Fertilizer Situation* report for 1977. Prices of fertilizer and seeds used were reported in the June 1978

[10] A significant portion of the acreage of corn and sorghum is harvested for forage and silage. Hence, the total of the acreage harvested for grain, forage, and silage is divided by the total planted acreage to obtain an estimate of the overall percentage harvested. This percentage is used to adjust harvest yields to the planted acre basis. A considerable portion of the acreage of small-grain crops, especially in the Southern States, is planted for purposes other than for harvest for grain. Data on the acreage harvested for these other purposes is not available. Hence, an estimate must be made of the overall percentage of harvest.

Agricultural Prices. Farm machinery prices for 1977 were obtained primarily from *Agricultural Prices*, supplemented by price lists of farm machinery manufacturers.

Data on the costs of chemicals were obtained from an ERS pesticide survey taken in early 1977 on the 1976 production year.

Farm overhead costs for 1977 were increased by 24 percent over 1974. Cotton ginning costs were based on ESCS-reported ginning rates for 1977. Crop drying costs were based on the percentage of crops dried, moisture levels, and fuel prices for 1977.

Some irrigation cost estimates in this report differ significantly from earlier reports as a result of changes made in many of the irrigation budgets. These changes were based on results of ESCS-funded studies on crop production in California, Arizona, Nebraska, Colorado, Kansas, Oklahoma, New Mexico, and Texas. Those studies (unpublished) describe the technology used in irrigation, such as water source, type of water distribution system, fuel type, and costs of purchased water where applicable.

DATA FOR 1978

Preliminary yield estimates, as reported in *Crop Production*, ESCS, USDA, January 16, 1979, were used to develop the unit cost of production estimates for 1978. The yield estimates were the most current estimates available at the time the cost estimates were prepared. Planted acreages in 1978 were used to weigh the various State budgets to obtain regional and national average planted acre yields for crops.

The quantities of fertilizer used in 1978 were reported in the ESCS *Fertilizer Situation* report for 1978 for corn, wheat, cotton, and soybeans. A special survey of fertilizer use on grain sorghum was conducted in 1978. No change was made in the fertilizer usage rates on oats, barley, flax, rice, or peanuts for 1978.

Seed prices reported in *Agricultural Prices* in September 1977 were used for the fall planted crops, and prices reported in the spring of 1978 were used for spring planted crops. Prices of all other inputs were adjusted as indicated in tables 2 and 3.

TABLE 2.—PRICE INDEXES FOR SELECTED ITEMS

Item	1974	1975	1976	1977	1978	1979
Fertilizer	246	320	272	266	265	268
Agricultural chemicals	329	443	481	434	407	425
Fuels and energy	281	313	331	357	373	400
Farm motor supplies	392	450	439	441	457	485
Autos and trucks	793	940	1,043	1,151	1,219	1,309
Tractors and self-propelled machinery	816	990	1,102	1,205	1,315	1,425
Other machinery	725	895	1,025	1,120	1,211	1,288
Building and fencing	733	835	871	928	1,001	1,079
Wage rates	1,506	1,627	1,781	1,915	2,053	2,200
Consumer Price Index	484	533	563	573	616	658
All machinery [1]			100	109	119	128
Custom rates [2]				100	105	112
Farm overhead costs [3]	100	111	118	124	133	143
Cotton ginning costs [4]				100	107	115
Seed					100	104

[1] Simple average of tractors and self-propelled machinery and other machinery.

[2] Based on index of farm services and cash rent.

[3] For 1974–77, based on composite of household operation, 39.4 percent; wages, 13.6 percent; auto and auto supplies, 23.6 percent; taxes, 0.6 percent; items used for production, 12.3 percent; and building and fencing repair, 10.5 percent. For 1978 and 1979, based upon index of production items with nonfarm origin.

[4] Cotton ginning charges for 1977 crop based on data reported in "Charges for Ginning Cotton, Costs of Selected Services, Incident to Marketing, and Related Information, 1977–78 Season", ESCS–26, Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture, June 1978. Costs for 1978 and 1979 are based on composite of indexes with labor equaling 40.8 percent, fuel equaling 8.5 percent, machinery equaling 20 percent, and items used for living and production equaling 30.7 percent.

Note: Blanks indicate not applicable.

TABLE 3.—U.S. AVERAGE PRICE PER UNIT OF INPUT

Input	Unit	1977	1978	1979 [1]
Gasoline	Gallon	$0.467	$0.489	$0.523
Diesel	do	.43	.44	.471
Liquid petroleum (LP) gas	do	.391	.401	.429
Electricity	Kilowatt-hour	.0368	.0398	.0426
Natural gas	Thousand cubic feet	1.70	1.95	2.16
Short-term interest rate [2]	Dollar	7.9	8.7	9.1
Long-term interest rate [2]	do	8.3	8.3	8.7
Labor	Dollars per hour	3.04	3.11	3.33
Nitrogen(N)	Pound	.181	.174	.176
Phosphate(P_2O_5)	do	.179	.177	.179
Potash (K_2O)	do	.081	.080	.081
Lime applied	Dollars per ton	9.16	9.60	9.70

[1] Projected using indexes from table 2 and 1978 base data.
[2] Interest rates for 1979 were assumed to increase by 4.6 percent over 1978.

COSTS OF PRODUCTION FOR 10 CROPS

Cotton

The costs of producing cotton for 1977 and 1978 are summarized in tables 4 and 5. Cost estimates for the Southwest (Arizona and California) differ considerably from earlier cost of production reports as a result of the previously mentioned study of irrigation costs in that region.[11] Estimates of fuel, purchased irrigation water, and ownership costs of irrigation equipment were substantially revised. Those changes increased nonland costs in the Southwest by about $23 per acre.

The Southern Plains (New Mexico, Oklahoma, and Texas) had the lowest nonland costs in 1977, both per acre and per pound of lint. Yields were excellent compared with other years. The Delta (Arkansas, Louisiana, Mississippi, and parts of Missouri and Tennessee) also experienced good cotton yields, averaging 530 pounds of lint per planted acre. The Southeast (Alabama, Georgia, North Carolina, and South Carolina) had its lowest per acre yields since 1967 which resulted in nonland costs of more than $1 per pound of lint produced.

The average per acre variable cost in 1978 actually declined for the United States, due primarily to lower fertilizer prices and to reduced quantities of fertilizer applied, lower chemical prices, and lower ginning costs as a result of lower yields. Machinery ownership costs increased by 3.3 percent. Machinery use per acre was down in 1978, particularly in the Southern Plains, because of higher than average crop abandonment leading to less use of harvesting equipment.

The U.S. average yield of lint per planted acre in 1978 dropped by 116 pounds, or 23 percent, and nonland costs per pound of lint increased by 14.6 cents, or 28 percent. Land costs per pound of lint increased by 32 to 35 percent.

Changes between 1977 and 1978 were not the same for all regions. The Southeast had a bumper yield in 1978 and, as a result, nonland costs dropped by 34 cents per pound of lint. Yields were fair in the Delta in 1978, although down by 10 percent from 1977; nonland costs increased by 8 cents per pound of lint. Yields in the Southern Plains declined by 33 percent compared with 1977, causing nonland costs to rise by almost 19 cents per pound, a 42-percent increase. In 1978, California had the lowest yields in many years. Yields for the entire Southwest were only 73 percent of 1977 yields, which were also low; nonland costs jumped by 20 cents per pound.

Total costs to renters, after giving credit for the value of cottonseed, averaged about 57 cents per pound in 1977 and about 71 cents per pound in 1978. An increase of almost 4 cents per pound in the value of cottonseed offset part of the cost increases.

[11] Compare with "Costs of Producing Selected Crops in the United States, 1976, 1977, and Projections for 1978." Senate Committee on Agriculture, Nutrition, and Forestry, Committee Print No. 24-607, March 1978, pp. 9-13.

Corn

Costs of producing corn in 1977 and 1978 are summarized in tables 6 and 7.[12] The Southwest had the highest per acre variable and machinery ownership costs for both years, while the Southeast, with the lowest yields, had the highest per bushel nonland costs in both years.

TABLE 4.—COTTON: PRODUCTION COSTS PER PLANTED ACRE AND PER POUND OF LINT BY COST ITEM, SPECIFIED REGIONS, 1977

Cost item	Southeast	Delta	Southern Plains	Southwest	United States
COSTS PER ACRE					
Variable	$178.82	$176.89	$106.75	$378.15	$168.21
Seed	6.20	6.37	6.68	7.36	6.67
Fertilizer	40.33	22.32	7.79	32.72	17.26
Lime	3.86	1.07			.54
Chemicals [1]	46.70	40.46	5.69	20.83	19.47
Custom operations [2]	11.64	7.11	8.82	51.75	14.71
All labor	19.16	23.61	17.22	52.66	24.03
Fuel and lubrication	9.41	10.71	12.05	11.47	11.45
Repairs	20.09	28.15	14.75	23.16	19.71
Ginning	16.99	33.57	31.54	70.60	36.63
Purchased irrigation water				95.94	13.70
Interest	4.44	3.52	2.21	11.66	4.04
Machinery ownership	56.96	82.62	46.25	63.26	58.62
Replacement	40.21	58.39	32.01	44.96	41.10
Interest	12.62	18.44	10.72	13.65	13.22
Taxes and insurance	4.13	5.79	3.52	4.65	4.30
General farm overhead	8.72	10.47	7.99	23.94	10.95
Management [3]	24.45	27.00	16.10	46.54	23.78
Total, excluding land	268.95	236.98	177.09	511.89	261.56
Land allocation:					
Composite with—					
Current value [4]	35.64	47.41	36.72	129.89	52.66
Average acquisition value [5]	20.29	33.43	27.45	87.57	37.06
COSTS PER POUND OF LINT					
Variable	.672	.333	.268	.386	.333
Machinery ownership	.214	.156	.116	.065	.116
Farm overhead	.033	.020	.020	.024	.022
Management	.092	.051	.040	.048	.047
Total, excluding land	1.011	.560	.444	.523	.518
Land allocation:					
Composite with—					
Current value	.134	.089	.092	.133	.104
Average acquisition value	.076	.063	.069	.090	.073
Value of cottonseed	.052	.058	.051	.063	.056
TOTAL PER POUND COSTS OF PRODUCTION TO A RENTER					
Cost to share renter [6]	1.187	.690	.579	.675	.623
Cost to cash renter [7]	1.165	.629	.498	.600	.630
Weighted renter cost [8]	1.171	.661	.569	.621	.625
Yield per acre (pounds of lint)	266	530	398	978	505
Percent of U.S. production	3.6	26.4	42.0	27.5	99.5

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Note: Blanks indicate not applicable.

[12] States in the corn regions are: Northeast—Maryland, New York, and Pennsylvania; Lake States and Corn Belt—Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin; Northern Plains—Colorado, Kansas, Nebraska, and South Dakota; Southeast—Alabama, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, and Virginia; Southwest—California and Texas.

TABLE 5.—COTTON: PRELIMINARY PRODUCTION COSTS PER PLANTED ACRE AND PER POUND OF LINT BY COST ITEM, SPECIFIED REGIONS, 1978

Cost item	South-east	Delta	Southern Plains	South-west	United States
COSTS PER ACRE					
Variable	$188.08	$177.71	$97.43	$378.03	$162.54
Seed	6.07	6.37	6.68	7.37	6.69
Fertilizer	32.83	20.77	5.21	27.94	13.42
Lime	3.38	.99			.37
Chemicals [1]	43.20	38.31	5.35	19.50	16.57
Custom operations [2]	13.07	7.50	9.07	54.03	15.81
All labor	21.03	25.12	17.21	54.72	24.91
Fuel and lubrication	9.64	10.67	12.68	11.92	11.98
Repairs	23.94	29.31	14.58	24.03	19.74
Ginning	30.40	34.89	24.30	59.06	32.28
Purchased irrigation water				105.57	16.23
Interest	4.52	3.78	2.35	13.89	4.54
Machinery ownership	71.74	89.00	46.86	67.71	60.57
Replacement	48.74	60.50	31.18	45.87	40.75
Interest	17.78	22.26	12.12	16.93	15.37
Taxes and insurance	5.22	6.24	3.56	4.91	4.45
General farm overhead	9.27	11.14	8.50	25.47	11.74
Management [3]	26.91	27.79	15.28	47.12	23.49
Total, excluding land	296.00	305.64	168.07	518.33	258.3
Land allocation:					
Composite with—					
Current value [4]	42.55	52.67	34.14	136.17	54.33
Average acquisition value [5]	27.60	36.68	23.94	90.60	37.19
COSTS PER POUND OF LINT					
Variable	.424	.373	.366	.532	.418
Machinery ownership	.162	.187	.176	.095	.156
Farm overhead	.021	.024	.032	.036	.030
Management	.061	.058	.058	.066	.060
Total, excluding land	.668	.642	.632	.729	.664
Land allocation:					
Composite with—					
Current value	.096	.111	.128	.192	.140
Average acquisition value	.062	.077	.090	.127	.096
Value of cottonseed	.084	.096	.097	.090	.094
TOTAL PER POUND COSTS OF PRODUCTION TO A RENTER					
Cost to share renter [6]	.862	.827	.773	1.047	.814
Cost to cash renter [7]	.744	.720	.697	.861	.777
Weighted renter cost [8]	.781	.776	.764	.914	.803
Yield per acre (pounds of lint)	443	476	266	711	389
Percent of U.S. production	5.1	27.2	39.5	28.1	99.9

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Note: Blanks indicate not applicable.

TABLE 6.—CORN: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1977

Cost item	North-east	Lake States and Corn Belt	Northern Plains	South-east	South-west	United States
COSTS PER ACRE						
Variable	$100.79	$94.95	$91.11	$102.20	$133.94	$96.41
Seed	10.61	11.20	11.53	9.99	9.92	11.06
Fertilizer	39.01	35.75	20.33	45.26	30.28	34.36
Lime	2.06	.95	.03	2.51	----------	.99
Chemicals [1]	9.59	9.44	7.26	8.80	6.19	8.95
Custom operations [2]	7.42	5.45	4.30	6.12	8.57	5.49
All labor	12.14	9.89	16.07	11.91	24.97	11.57
Fuel and lubrication	5.67	5.80	15.29	6.31	26.23	7.89
Repairs	4.56	6.42	9.37	6.33	16.00	7.07
Drying	6.85	7.18	4.67	1.87	4.12	6.10
Purchased irrigation water	----------	----------	----------	----------	3.97	.11
Interest	2.88	2.87	2.26	3.10	3.69	2.82
Machinery ownership	23.24	25.30	36.55	22.96	56.95	27.59
Replacement	15.81	16.90	24.80	15.47	39.85	18.56
Interest	5.53	6.27	8.72	5.56	12.83	6.73
Taxes and insurance	1.90	2.13	3.03	1.93	4.27	2.30
General farm overhead	10.02	9.66	9.22	8.33	16.50	9.64
Management [3]	13.41	12.99	13.69	13.35	20.74	13.36
Total, excluding land	147.46	142.90	150.57	146.84	228.13	147.00
Land allocation:						
Composite with—						
Current value [4]	59.68	90.11	63.16	44.09	41.26	78.41
Average acquisition value [5]	31.90	54.53	39.44	26.20	29.39	47.56
COSTS PER BUSHEL						
Variable	1.23	.99	1.01	2.30	1.34	1.09
Machinery ownership	.28	.26	.41	.51	.57	.31
Farm overhead	.12	.10	.10	.19	.16	.11
Management	.16	.14	.15	.30	.21	.15
Total, excluding land	1.79	1.49	1.67	3.30	2.28	1.66
Land allocation:						
Composite with—						
Current value	.73	.94	.70	.99	.41	.88
Average acquisition value	.39	.57	.44	.59	.29	.54
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER						
Cost to share renter [6]	2.71	2.30	2.44	3.19	2.97	2.40
Cost to cash renter [7]	2.26	2.23	2.21	5.86	2.65	2.54
Weighted renter cost [8]	2.29	2.28	2.40	4.90	2.91	2.44
Yield per acre (bushels)	82.2	95.7	90.3	44.5	99.9	88.8
Percent of U.S. production	3.1	71.2	15.7	5.5	3.0	98.5

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Note: Blanks indicate not applicable.

TABLE 7.—CORN: PRELIMINARY PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1978

Cost item	Northeast	Lake States and Corn Belt	Northern Plains	South-east	South-west	United States
COSTS PER ACRE						
Variable	$102.46	$96.35	$93.20	$107.05	$141.70	$98.27
Seed	10.62	11.18	11.41	10.11	10.23	11.07
Fertilizer	39.11	34.19	20.12	44.34	29.79	32.94
Lime	2.45	1.13	.03	2.75	----	1.13
Chemicals [1]	9.02	8.84	6.68	8.27	5.93	8.35
Custom operations [2]	7.23	5.81	4.83	6.56	10.40	5.89
All labor	12.17	10.71	16.50	13.20	25.78	12.36
Fuel and lubrication	5.92	6.11	16.06	6.95	28.30	8.41
Repairs	4.99	7.18	10.04	7.56	17.27	7.87
Drying	7.77	8.07	5.04	3.95	4.34	7.04
Purchased irrigation water	----	----	----	----	5.44	.14
Interest	3.18	3.13	2.49	3.36	4.22	3.07
Machinery ownership	26.54	28.91	41.24	30.18	63.63	31.88
Replacement	17.26	18.39	26.70	19.48	42.72	20.46
Interest	7.11	8.09	11.12	8.16	16.11	8.77
Taxes and insurance	2.17	2.43	3.42	2.54	4.80	2.65
General farm overhead	10.66	10.27	9.81	8.86	17.55	10.25
Management [3]	13.97	13.55	14.42	14.61	22.29	14.04
Total, excluding land	153.63	149.08	158.67	160.70	245.17	154.44
Land allocation: Composite with—						
Current value [4]	67.10	99.58	66.93	49.06	49.37	86.61
Average acquisition value [5]	35.78	61.35	44.39	29.70	35.96	53.78
COSTS PER BUSHEL						
Variable	1.13	.90	.94	1.61	1.37	.97
Machinery ownership	.29	.27	.41	.45	.62	.32
Farm overhead	.12	.09	.10	.13	.17	.10
Management	.15	.13	.14	.22	.22	.14
Total, excluding land	1.69	1.39	1.59	2.41	2.38	1.53
Land allocation: Composite with—						
Current value	.74	.93	.67	.74	.48	.86
Average acquisition value	.39	.57	.45	.45	.35	.53
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER						
Cost to share renter [6]	2.38	2.17	2.33	2.99	3.10	2.27
Cost to cash renter [7]	2.09	2.13	2.10	3.23	2.75	2.27
Weighted renter cost [8]	2.11	2.16	2.29	3.14	3.03	2.27
Yield per acre (bushels)	90.9	107.0	99.7	66.7	103.0	101.0
Percent of U.S. production	3.1	70.0	16.2	6.6	2.5	98.4

[1] Includes herbicides, insecticides, and rodenticide materials not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Note: Blanks indicate not applicable.

The Lake States and Corn Belt region had the lowest per bushel nonland costs and the highest, or nearly the highest, land costs in both 1977 and 1978. The consistently lower per bushel nonland costs in that region result in greater returns to land which, over time, become capitalized into land values.

Corn production in the Southwest is predominantly irrigated and, therefore, has high per acre costs. The region has high unit costs as well, since the yields do not offset the additional costs. The Southeast consistently has the highest cost per bushel because of low yields, high fertilizer costs, and high machinery ownership costs (due to small farm size). Most regions, except the Southeast, had average corn yields in 1977. The Southeast averaged only 44.5 bushels per planted acre—about half the national average. As a result, nonland costs there were $3.30 per bushel.

Per acre variable costs increased in all regions in 1978. The average national increase was $1.86 per acre, or about 2 percent. Declines in fertilizer and chemical prices, along with a decline in fertilizer use, partially offset rising costs for all other items. Machinery ownership costs increased nationally by $4.29 per acre, or 15.5 percent. The large increase in machinery costs occurred because of higher interest rates and higher average machinery investment as the cost of replacing machinery continues to increase.

Per acre land costs increased by 10 to 13 percent in 1978. Returns to landowners on share-rental arrangements increased by 17 percent due to both higher corn yields and higher prices in 1978. Corn yields per planted acre were higher in 1978 than in 1977 in all regions. The national average yield increased by 12.2 bushels, or 13.7 percent. The improved yields offset the increased per acre costs so that nonland costs per bushel were lower in all regions except the Southwest. The national average cost per bushel declined by 13 cents, or 7.8 percent.

The rate of increase in yields was about the same as the rate of increase in land costs, so land costs per bushel remained about constant.

Total costs to renters averaged $2.44 per bushel in 1977, with cash renters' cost somewhat higher than share renters' cost. Renter costs in 1978 were $2.27 per bushel for both types of renters.

Grain Sorghum

Estimates of costs of producing grain sorghum are presented in tables 8 and 9.[13] Per acre and per bushel nonland costs are consistently highest in the Southwest. The high per acre costs result because practically all grain sorghum in the Southwest is irrigated.

[13] States in the grain sorghum regions are: Central Plains—Colorado, Missouri, Nebraska, Kansas, and South Dakota; Southern Plains—Arkansas, New Mexico, Oklahoma, and Texas; Southwest—Arizona and California.

TABLE 8.—GRAIN SORGHUM: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1977

Cost item	Central Plains	Southern Plains	Southwest	United States
COSTS PER ACRE				
Variable	$50.00	$56.16	$144.14	$54.18
Seed	3.59	3.39	7.14	3.56
Fertilizer	12.32	11.76	29.45	12.35
Lime	.02	(1)	(1)	.01
Chemicals [2]	4.06	1.90	2.11	3.08
Custom operations [3]	4.48	4.14	5.18	4.34
All labor	9.67	13.30	35.95	11.67
Fuel and lubrication	6.88	10.83	30.76	8.99
Repairs	6.14	9.40	12.06	7.66
Drying	1.70	(1)	(1)	.93
Irrigation water	(1)	(1)	17.30	.27
Interest	1.14	1.44	4.19	1.32
Machinery ownership	21.97	31.85	37.28	26.54
Replacement	14.66	21.71	25.18	17.91
Interest	5.43	7.62	8.99	6.44
Taxes and insurance	1.88	2.52	3.11	2.19
General farm overhead	6.23	6.13	10.87	6.26
Management [4]	7.82	9.41	19.23	8.70
Total, excluding land	86.02	103.55	211.52	95.68
Land allocation: Composite with—				
Current value [5]	41.07	26.68	73.56	35.27
Average acquisition value [6]	26.13	17.13	49.72	22.56
COSTS PER BUSHEL				
Variable	.81	1.28	1.92	1.00
Machinery ownership	.36	.72	.50	.49
Farm overhead	.10	.14	.14	.12
Management	.13	.21	.26	.16
Total, excluding land	1.40	2.35	2.82	1.77
Land allocation: Composite with—				
Current value	.67	.60	.98	.65
Average acquisition value	.42	.39	.66	.42
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER				
Cost to share renter [7]	2.03	3.21	4.00	2.50
Cost to cash renter [8]	1.85	2.78	3.24	2.39
Weighted renter cost [9]	2.01	3.15	3.63	2.49
Yield per acre (bushels)	61.6	44.1	74.9	54.1
Percent of U.S. production	60.8	35.0	2.1	97.9

[1] Not applicable.
[2] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[3] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[4] Based on 10 percent of above costs.
[5] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[6] Same as footnote 5, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[7] Share-renter portion of cost divided by share-renter portion of crop.
[8] Cash-renter costs including cash rent divided by total yield.
[9] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

TABLE 9.—GRAIN SORGHUM: PRELIMINARY PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1978

Cost item	Central Plains	Southern Plains	Southwest	United States
COSTS PER ACRE				
Variable	$52.23	$60.96	$151.22	$57.86
Seed	3.56	3.46	7.57	3.60
Fertilizer	12.14	11.89	29.70	12.37
Lime	.02	(1)	(1)	.01
Chemicals [2]	3.83	1.85	2.00	2.95
Custom operations [3]	4.73	4.82	4.96	4.77
All labor	10.42	14.07	39.04	12.53
Fuel and lubrication	7.37	12.51	26.80	9.94
Repairs	6.70	10.75	12.55	8.54
Drying	2.17	(1)	(1)	1.20
Purchased irrigation water	(1)	(1)	23.28	.45
Interest	1.29	1.61	5.32	1.50
Machinery ownership	24.90	38.19	40.76	30.87
Replacement	15.82	25.06	25.96	19.95
Interest	6.96	10.13	11.41	8.40
Taxes and insurance	2.12	3.00	3.39	2.52
General farm overhead	6.63	6.52	11.56	6.67
Management [4]	8.38	10.57	20.35	9.54
Total, excluding land	92.14	116.24	223.89	104.94
Land allocation: Composite with—				
Current value [5]	42.00	28.56	82.01	37.04
Average acquisition value [6]	27.58	17.74	56.42	23.94
COSTS PER BUSHEL				
Variable	.91	1.34	2.16	1.10
Machinery ownership	.43	.84	.58	.59
Farm overhead	.12	.14	.16	.13
Management	.15	.23	.29	.18
Total, excluding land	1.61	2.55	3.19	2.00
Land allocation: Composite with—				
Current value	.73	.63	1.17	.71
Average acquisition value	.48	.39	.80	.46
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER				
Cost to share renter [7]	2.36	3.48	4.54	2.83
Cost to cash renter [8]	2.05	3.03	3.71	2.63
Weighted renter cost [9]	2.33	3.42	4.20	2.81
Yield per acre (bushels)	57.2	45.5	70.2	52.5
Percent of U.S. production	58.9	36.0	2.5	97.4

[1] Not applicable.
[2] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[3] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[4] Based on 10 percent of above costs.
[5] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[6] Same as footnote 5, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[7] Share-renter portion of cost divided by share-renter portion of crop.
[8] Cash-renter costs including cash rent divided by total yield.
[9] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Yields in 1977 were particularly good in the Central Plains and Southwest, while yields in the Southern Plains were below the 5-year (1974–78) average. The Central Plains had the lowest per bushel non-

land costs, which averaged $1.82 per bushel for irrigated sorghum and $1.34 per bushel for dryland sorghum. About 86 percent of the production of sorghum in the Central Plains was on dryland acreage. Nonland costs in the Southern Plains averaged $2.50 per bushel for irrigated sorghum and $2.26 per bushel for dryland sorghum. For the Nation, 22.4 percent of the grain sorghum was produced under irrigation at an average nonland cost of $2.30 per bushel, while nonland costs for dryland sorghum were $1.62 per bushel. National average variable costs per acre rose $3.68 between 1977 and 1978, or 6.8 percent. Costs of all inputs except chemicals increased, although the increase in fertilizer costs was small.

National average costs of machinery ownership increased $4.33 per acre, or 16.3 percent. Part of this cost increase was due to shifts from dryland to irrigation in the Southern Plains and a 46-percent increase in sorghum acreage in California, which is a high-cost area.

Yields in 1978 were down by 4.4 bushels per planted acre in the Central Plains and by 4.7 bushels in the Southwest. Yields in the Southern Plains in 1978 were only 0.6 bushel per acre higher than in 1977. The U.S. average yield per planted acre in 1978 was 1.6 bushels lower than in 1977. Still, yields in 1978 were better than in 1974, 1975, or 1976.

Per bushel nonland costs increased in all regions in 1978 due to cost increases and yield declines. The increases were 20 cents per bushel in the Southern Plains, 21 cents in the Central Plains, and 37 cents in the Southwest. The U.S. average increase was 23 cents per bushel.

Nationally, land costs went up by 5 to 6 percent per acre and 9 to 10 percent per bushel of sorghum produced.

Total costs to renters averaged $2.49 per bushel in 1977, but the costs varied widely among regions. Share renters' costs averaged 11 cents per bushel higher than cash renters'. Costs to all renters increased by 32 cents in 1978 to $2.81 per bushel.

Barley

The costs of producing barley in 1977 and 1978 are reported in tables 10 and 11.[14] The Northern Plains, which is the major producing region, had the lowest per acre and per bushel nonland and land costs in both years. The Southwest had the highest per acre and per bushel nonland costs. Land costs were highest in the Northeast in both years, on both a per acre and a per bushel basis.

[14] States in the barley-producing regions are: Northeast—Pennsylvania; Northern Plains—Montana, Minnesota, North Dakota, South Dakota, and Wyoming; Southern Plains—Colorado and Oklahoma; Southwest—Arizona and California; and Northwest—Idaho, Oregon, and Washington.

TABLE 10.—BARLEY: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1977

Cost item	North-east	Northern Plains	Southern Plains	South-west	North-west	United States
COSTS PER ACRE						
Variable	$50.05	$32.14	$48.27	$81.44	$44.80	$41.44
Seed	6.23	4.00	4.88	6.72	5.41	4.64
Fertilizer	14.78	5.64	6.73	8.79	9.27	6.79
Lime	2.13	---	---	---	---	.03
Chemicals [1]	1.89	1.32	2.98	1.62	2.48	1.62
Custom operations [2]	3.08	2.38	2.54	4.19	3.17	2.75
All labor	10.34	7.25	12.00	21.02	10.94	9.86
Fuel and lubrication	4.74	4.62	11.11	5.58	3.63	4.88
Repairs	4.81	5.29	6.70	6.64	4.90	5.46
Purchased irrigation water	---	.92	---	23.90	4.04	4.31
Miscellaneous	---	.10	---	---	---	.07
Interest	2.05	.62	1.33	2.98	.96	1.03
Machinery ownership	19.49	19.24	28.02	22.06	19.68	20.07
Replacement	13.23	12.75	19.01	15.01	13.07	13.38
Interest	4.65	4.84	6.66	5.21	4.91	4.98
Taxes and insurance	1.61	1.65	2.35	1.84	1.70	1.71
General farm overhead	7.86	5.22	5.27	10.49	6.63	6.16
Management [3]	7.74	5.66	8.16	11.40	7.11	6.77
Total, excluding land	85.14	62.26	89.72	125.39	78.22	74.44
Land allocation:						
Composite with—						
Current value [4]	98.97	30.70	34.80	68.92	49.78	39.75
Average acquisition value [5]	36.68	16.28	20.88	46.21	23.86	21.81
COSTS PER BUSHEL						
Variable	1.08	.83	1.14	1.72	1.27	1.04
Machinery ownership	.42	.49	.66	.47	.56	.51
Farm overhead	.17	.13	.13	.22	.19	.16
Management	.17	.15	.19	.24	.20	.17
Total, excluding land	1.84	1.60	2.12	2.65	2.22	1.88
Land allocation:						
Composite with—						
Current value	2.14	.79	.82	1.46	1.41	1.00
Average acquisition value	.79	.42	.49	.98	.68	.55
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER						
Cost to share renter [6]	3.19	2.39	2.99	4.08	3.41	2.89
Cost to cash renter [7]	2.42	2.23	2.87	3.17	2.40	2.44
Weighted renter cost [8]	2.50	2.33	2.98	3.85	3.28	2.76
Yield per acre (bushels)	46.3	38.8	42.3	47.3	35.3	39.6
Percent of U.S. production	1.5	57.7	4.3	13.8	12.4	89.7

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Note: Blanks indicate not applicable.

TABLE 11.—BARLEY: PRELIMINARY PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1978

Cost item	Northeast	Northern Plains	Southern Plains	South-west	North-west	United States
COSTS PER ACRE						
Variable	$50.38	$33.92	$52.00	$85.08	$49.82	$44.11
Seed	6.23	4.05	4.57	7.32	5.43	4.75
Fertilizer	14.16	5.60	7.07	8.52	10.73	7.01
Lime	2.74					.04
Chemicals [1]	1.78	1.26	2.75	1.50	2.35	1.54
Custom operations [2]	3.24	2.60	2.52	4.38	3.26	2.95
All labor	9.76	7.90	13.24	21.38	12.42	10.62
Fuel and lubrication	4.95	4.83	12.68	5.87	4.12	5.19
Repairs	5.23	5.89	7.60	7.23	5.80	6.11
Purchased irrigation water		.97		25.35	4.57	4.63
Miscellaneous		.11				.07
Interest	2.29	.71	1.57	3.53	1.14	1.20
Machinery ownership	22.21	22.50	33.44	25.80	24.58	23.73
Replacement	14.38	14.20	21.61	16.63	15.38	15.03
Interest	6.02	6.37	9.04	7.05	7.07	6.68
Taxes and insurance	1.81	1.93	2.79	2.12	2.13	2.02
General farm overhead	8.35	5.55	5.60	11.15	7.05	6.56
Management [3]	8.09	6.20	9.10	12.20	8.15	7.44
Total, excluding land	89.03	68.17	100.14	134.23	89.60	81.84
Land allocation:						
Composite with—						
Current value [4]	109.79	34.31	40.23	71.92	60.55	44.82
Average acquisition value [5]	40.56	18.46	25.12	46.61	30.52	24.66
COSTS PER BUSHEL						
Variable	1.16	.78	1.09	2.02	.88	.97
Machinery ownership	.51	.51	.70	.62	.43	.52
Farm overhead	.19	.13	.12	.26	.12	.14
Management	.19	.14	.19	.29	.14	.16
Total, excluding land	2.05	1.56	2.10	3.19	1.57	1.79
Land allocation:						
Composite with—						
Current value	2.52	.79	.85	1.71	1.06	.98
Average acquisition value	.93	.42	.53	1.11	.53	.54
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER						
Cost to share renter [6]	3.59	2.31	2.95	4.89	2.20	2.72
Cost to cash renter [7]	2.74	2.17	3.23	3.84	2.11	2.46
Weighted renter cost [8]	2.83	2.26	2.98	4.63	2.19	2.64
Yield per acre (bushels)	43.5	43.7	47.6	42.1	57.1	45.8
Percent of U.S. production	1.3	56.5	4.0	10.8	18.5	91.1

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Note: Blanks indicate not applicable.

The national average per acre variable cost increased by $2.67 per acre (6.4 percent) in 1978. Machinery ownership costs increased $3.66 per acre (18.2 percent), and land costs increased 12 to 13 percent per acre. Most of the increase in land costs is due to the increase in returns to landowners under share rental arrangements. These returns increased by 23 percent in 1978, due to both higher yields and higher prices in most production areas.

Nonland costs dropped by 9 cents per bushel as a result of higher yields in 1978. Land costs per bushel also declined due to the yield increase.

The national average yield per planted acre in 1978 (45.8 bushels) was a record nationally, with most of the producing regions showing increases. The national average yield per planted acre was 39.6 bushels in 1977, 41.3 in 1976, 40.6 in 1975, and 33.6 in 1974.

Although costs per bushel to a renter were similar for both the share renter and cash renter nationally, share renters' total costs were higher than cash renters' total costs in both years. Tenants in the Southwest had the highest costs in both 1977 and 1978; in that region, 1978 was not a high-yield year.

Nationally, 30 percent of the barley acreage were grown under share rental-lease arrangements and 12 percent under cash-lease arrangements.

Oats

The costs of producing oats in 1977 and 1978 are presented in tables 12 and 13.[15] Per acre and per bushel nonland costs have consistently been highest in the Northeast. Per acre nonland costs were higher in the Lake States and Corn Belt than in the Northern Plains in both years. Per bushel nonland costs were lowest in the Lake States and Corn Belt in 1977, but were lowest in the Northern Plains in 1978.

[15] States in oats-producing regions are: Northeast—New York and Pennsylvania; Lake States and Corn Belt—Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin; and Northern Plains—Montana, Nebraska, North Dakota, and South Dakota.

TABLE 12.—OATS: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1977

Cost item	Northeast	Lake States and Corn Belt	Northern Plains	United States
COSTS PER ACRE				
Variable	$46.37	$26.52	$23.39	$26.29
Seed	3.88	2.65	2.82	2.79
Fertilizer	14.52	4.92	4.31	5.20
Lime	1.93	1.01	----------	.63
Chemicals [1]	.42	.28	.22	.26
Custom operations [2]	3.96	1.92	1.87	2.02
All labor	10.92	6.80	5.46	6.46
Fuel and lubrication	4.91	4.00	3.77	3.95
Repairs	4.81	4.40	4.33	4.39
Miscellaneous	----------	----------	.24	.10
Interest	1.02	.54	.37	.49
Machinery ownership	21.40	18.23	15.33	17.16
Replacement	14.60	12.17	10.19	11.46
Interest	5.05	4.52	3.82	4.25
Taxes and insurance	1.75	1.54	1.32	1.45
General farm overhead	6.77	6.00	3.46	4.96
Management [3]	7.45	5.08	4.22	4.84
Total, excluding land	81.99	55.83	46.40	53.25
Land allocation:				
Composite with—				
Current value [4]	53.69	68.00	27.88	50.02
Average acquisition [5]	24.47	32.80	14.99	24.71
COSTS PER BUSHEL				
Variable	.94	.43	.52	.49
Machinery ownership	.43	.30	.34	.32
Farm overhead	.14	.10	.08	.09
Management	.15	.08	.09	.09
Total, excluding land	1.66	.91	1.03	.99
Land allocation:				
Composite with—				
Current value	1.09	1.10	.62	.93
Average acquisition value	.50	.53	.33	.46
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER				
Cost to share renter [6]	2.93	1.55	1.60	1.58
Cost to cash renter [7]	2.13	1.85	1.77	1.87
Weighted renter cost [8]	2.18	1.65	1.63	1.67
Yield per acre (bushels)	49.4	61.6	44.9	53.8
Percent of U.S. production	4.5	52.3	31.7	88.5

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Note: Blanks indicate not applicable.

TABLE 13.—OATS: PRELIMINARY PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1978

Cost item	Northeast	Lake States and Corn Belt	Northern Plains	United States
COSTS PER ACRE				
Variable	$46.84	$27.75	$24.82	$27.78
Seed	4.02	2.67	2.87	2.83
Fertilizer	13.48	5.19	4.28	5.35
Lime	2.26	.98	(1)	.67
Chemicals [2]	.39	.26	.20	.25
Custom operations [3]	4.22	2.27	2.17	2.35
All labor	10.95	6.98	5.84	6.77
Fuel and lubrication	5.14	4.06	3.98	4.10
Repairs	5.27	4.73	4.82	4.80
Miscellaneous	(1)	(1)	.25	.10
Interest	1.11	.61	.41	.56
Machinery ownership	24.40	20.25	18.24	19.71
Replacement	15.96	12.90	11.57	12.57
Interest	6.44	5.64	5.11	5.48
Taxes and insurance	2.00	1.71	1.56	1.66
General farm overhead	7.20	6.38	3.68	5.36
Management [4]	7.84	5.44	4.67	5.29
Total, excluding land	86.28	59.82	51.41	58.14
Land allocation: Composite with—				
Current value [5]	57.08	71.36	29.15	53.69
Average acquisition value [6]	26.56	33.65	15.10	25.83
COSTS PER BUSHEL				
Variable	.87	.54	.52	.56
Machinery ownership	.46	.39	.38	.39
Farm overhead	.13	.12	.08	.11
Management	.15	.11	.10	.11
Total, excluding land	1.61	1.16	1.08	1.17
Land allocation: Composite with—				
Current value	1.07	1.39	.61	1.08
Average acquisition value	.50	.65	.32	.52
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER				
Cost to share renter [7]	2.98	2.02	1.74	1.89
Cost to cash renter [8]	2.07	2.29	1.50	2.06
Weighted renter cost [9]	2.13	2.11	1.69	1.94
Yield per acre (bushels)	53.5	51.4	47.4	49.9
Percent of U.S. production	5.9	49.1	33.3	88.3

[1] Not applicable.
[2] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[3] Includes custom application of crop chemcials, the cost of chemicals in some cases, and custom harvesting and hauling.
[4] Based on 10 percent of above costs.
[5] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[6] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[7] Share-renter portion of cost divided by share-renter portion of crop.
[8] Cash-renter costs including cash rent divided by total yield.
[9] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Per acre and per bushel land costs have been consistently highest in the Lake States and Corn Belt. Land values are generally higher in this region due to the productivity of other crops that oats must compete with. Land costs have consistently been lowest in the Northern Plains.

Nationally, in 1978, total nonland costs increased by $4.89, or 9.2 percent, while land costs increased 5 to 7 percent. Per acre variable costs increased by $1.49, or 5.7 percent. Machinery ownership costs increased by $2.55 per acre, or 14.9 percent. Returns to landowners for land operated on a share basis were lower in 1978 than in 1977 because of a decline in yields. Oat yields in 1978 were 17 percent lower than in 1977 in the Lake States and Corn Belt, which lowered the national average yield by 3.9 bushels, or 7 percent. The U.S. average yield per planted acre averaged 45.8 bushels for the 5 years, 1974–78. The 49.9 bushel yield in 1978 was above recent years.

U.S. average nonland costs increased by 18 cents per bushel in 1978. This resulted from the increase in per acre costs and the decline in yields. Per bushel land costs increased by 13 to 16 percent. Cash renters had higher costs than share renters in both years. Costs to the average renter increased by 27 cents per bushel, or 16 percent, in 1978.

Wheat

The costs of producing Durum wheat in 1977 and 1978 are shown in table 14. Nearly 90 percent of the U.S. Durum wheat crop is produced in North Dakota, South Dakota, Minnesota, and Montana. Durum yields in 1977, lower than in 1976 or 1975, gave a nonland cost estimate of $2.81 per bushel. Per acre variable costs declined in 1978 due to lower prices of seed and fertilizer and declines in the quantities of fertilizer used. Per acre machinery ownership costs increased by $2.83, or 14.9 percent, in 1978. Record Durum yields in 1978 sharply reduced the per bushel cost.

TABLE 14.—DURUM WHEAT: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, 1977-78

Cost item	1977	1978 (preliminary)
COSTS PER ACRE		
Variable	$33.95	$33.63
Seed	5.72	5.65
Fertilizer	4.74	3.50
Chemicals [1]	.79	.77
Custom operations [2]	2.45	2.57
All labor	8.19	8.53
Fuel and lubrication	5.27	5.34
Repairs	5.88	6.31
Interest	.91	.96
Machinery ownership	19.04	21.87
Replacement	12.56	13.79
Interest	4.83	6.20
Taxes and insurance	1.65	1.88
General farm overhead	6.43	6.83
Management [3]	5.94	6.23
Total, excluding land	65.36	68.56
Land allocation: Composite with—		
Current value [4]	36.50	40.67
Average acquisition value [5]	19.68	23.53
COSTS PER BUSHEL		
Variable	1.46	1.11
Machinery ownership	.82	.72
Farm overhead	.28	.23
Management	.25	.20
Total, excluding land	2.81	2.26
Land allocation: Composite with—		
Current value	1.57	1.34
Average acquisition value	.84	.77
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER		
Cost to share renter [6]	4.37	3.51
Cost to cash renter [7]	4.35	3.49
Weighted renter cost [8]	4.36	3.50
Yield per acre (bushels)	23.3	30.4
Percent of U.S. production	88.7	88.7

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Costs of production for Hard Red Spring wheat in 1977 and 1978 are shown in table 15. Hard Red Spring wheat is raised in the same general area as Durum and also in Idaho. Much of the Spring wheat in Idaho is irrigated.

The 1977 Spring wheat yields were higher than in the preceding 3 years. Yields increased again in 1978—by 1.5 bushels—and were the second highest on record. The average nonland cost in 1977 was $2.42 per bushel, and total renter cost was $3.64 per bushel. Per acre variable costs increased in 1978 by 7.3 percent, and machinery ownership costs increased by 15.7 percent. Total per acre nonland costs increased 10 percent, and land costs increased 9 percent. Despite the 1978 yield increases, nonland costs increased by 10 cents per bushel and renters' costs increased by 13 cents to $3.77 per bushel.

White wheat is produced in Idaho, Washington, and Oregon; its costs of production are shown in table 16. White wheat is also produced in Michigan and New York; its costs of production are combined with those for Soft Red Winter wheat presented in table 17. Wheat yields were very low in the Pacific Northwest in 1977, averaging 32.5 bushels per planted acre, compared with 45 bushels in 1976 and 46.2 bushels in 1975. Consequently, costs per bushel were high in 1977.

Yields in 1978 averaged 45 bushels per planted acre, comparable to the 1975 and 1976 levels. Costs per bushel declined as a result of the 38-percent increase in yields. Nonland costs declined by 68 cents per bushel, and costs to renters declined by 99 cents.

Per acre variable costs stayed about the same in 1978, with reductions in seed, fertilizer, and chemical costs offsetting other cost increases. Machinery ownership costs increased by $4.48, or 17.5 percent. Per acre land costs increased 27 to 40 percent. These increases were led by larger share rent costs because of higher prices and much higher yields.

TABLE 15.—HARD RED SPRING WHEAT: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, 1977–78

Cost item	1977	1978 (preliminary)
COSTS PER ACRE		
Variable	$33.65	$36.12
Seed	5.02	5.08
Fertilizer	6.32	7.47
Chemicals [1]	1.01	.90
Custom operations [2]	2.58	2.73
All labor	7.38	7.78
Fuel and lubrication	4.87	5.05
Repairs	5.48	6.01
Purchased irrigation water	.16	.12
Interest	.83	.98
Machinery ownership	19.12	22.12
Replacement	12.67	13.98
Interest	4.81	6.25
Taxes and insurance	1.64	1.89
General farm overhead	6.07	6.46
Management [3]	5.88	6.47
Total, excluding land	64.72	71.17
Land allocation: Composite with—		
Current value [4]	36.23	39.49
Average acquisition value [5]	19.51	21.27
COSTS PER BUSHEL		
Variable	1.26	1.28
Machinery ownership	.71	.78
Farm overhead	.23	.23
Management	.22	.23
Total, excluding land	2.42	2.52
Land allocation: Composite with—		
Current value	1.36	1.40
Average acquisition value	.73	.75
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER		
Cost to share renter [6]	3.52	3.75
Cost to cash renter [7]	3.78	3.80
Weighted renter cost [8]	3.64	3.77
Yield per acre (bushels)	26.7	28.2
Percent of U.S. production	99.0	99.3

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

TABLE 16.—WHITE WHEAT: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, 1977–78

Cost item	1977	1978 (preliminary)
COSTS PER ACRE		
Variable	$51.75	$51.92
Seed	5.06	4.25
Fertilizer	14.08	12.99
Chemicals [1]	4.80	4.56
Custom operations [2]	3.74	4.00
All labor	8.87	9.26
Fuel and lubrication	5.06	5.51
Repairs	6.66	7.48
Purchased irrigation water	1.06	1.23
Interest	2.42	2.64
Machinery ownership	25.55	30.03
Replacement	17.37	19.28
Interest	6.09	8.30
Taxes and insurance	2.09	2.45
General farm overhead	7.66	8.14
Management [3]	8.50	9.01
Total, excluding land	93.46	99.10
Land allocation: Composite with—		
Current value [4]	55.78	70.86
Average acquisition value [5]	30.56	42.80
COSTS PER BUSHEL		
Variable	1.59	1.15
Machinery ownership	.79	.67
Farm overhead	.24	.18
Management	.26	.20
Total, excluding land	2.88	2.20
Land allocation: Composite with—		
Current value	1.72	1.57
Average acquisition value	.94	.95
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER		
Cost to share renter [6]	4.24	3.18
Cost to cash renter [7]	3.37	2.90
Weighted renter cost [8]	4.13	3.14
Yield per acre (bushels)	32.5	45.0
Percent of U.S. production	92.0	93.0

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4. except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Soft Red Winter wheat is grown in the Eastern half of the United States; its costs of production for 1977 and 1978 are shown in tables 17 and 18.[16] The Lake States and Corn Belt region generally produces over 75 percent of the Soft Red Winter wheat. For both 1977 and 1978, the Lake States and Corn Belt had the lowest per acre and per bushel nonland costs and the lowest total renter costs. Land costs per acre and per bushel were highest in the Southeast for both years.

TABLE 17.—SOFT RED WINTER WHEAT: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1977

Cost item	Northeast	Lake States and Corn Belt	Southeast	United States
COSTS PER ACRE				
Variable	$61.10	$49.15	$55.19	$50.96
Seed	7.25	6.07	6.73	6.26
Fertilizer	24.78	22.63	23.72	22.96
Lime	1.94	.71	1.60	.95
Chemicals [1]	.09	.27	.26	.26
Custom operations [2]	5.07	3.32	3.76	3.50
All labor	9.80	6.40	7.78	6.84
Fuel and lubrication	4.73	3.72	4.41	3.91
Repairs	4.60	3.81	4.57	4.00
Interest	2.84	2.22	2.36	2.28
Machinery ownership	18.64	17.05	16.59	17.05
Replacement	12.66	11.40	11.01	11.39
Interest	4.44	4.22	4.16	4.22
Taxes and insurance	1.54	1.43	1.42	1.44
General farm overhead	6.96	6.45	5.14	6.22
Management [3]	8.67	7.27	7.69	7.42
Total, excluding land	95.37	79.92	84.61	81.65
Land allocation: Composite with—				
Current value [4]	73.43	58.74	38.94	55.52
Average acquisition value [5]	30.88	31.87	21.04	29.65
COSTS PER BUSHEL				
Variable	1.85	1.21	1.77	1.33
Machinery ownership	.56	.42	.53	.45
Farm overhead	.21	.16	.17	.16
Management	.26	18	.25	.19
Total, excluding land	2.88	1.97	2.72	2.13
Land allocation: Composite with—				
Current value	2.22	1.45	1.25	1.45
Average acquisition value	.93	.78	.68	.77
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER				
Cost to share renter [6]	([7])	3.01	3.53	3.08
Cost to cash renter [8]	3.73	3.29	3.97	3.55
Weighted renter cost [9]	3.73	3.05	3.74	3.18
Yield per acre (bushels)	33.1	40.6	31.1	38.3
Percent of U.S. production	4.3	78.6	16.1	99.0

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Not applicable.
[8] Cash-renter costs including cash rent divided by total yield.
[9] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

[16] States in the Soft Red Winter wheat region are: Northeast—New York and Pennsylvania; Lake States and Corn Belt—Illinois, Indiana, Michigan, Missouri, and Ohio; Southeast—Kentucky, North Carolina, Tennessee, Virginia, and Arkansas.

TABLE 18.—SOFT RED WINTER WHEAT: PRELIMINARY PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1978

Cost item	Northeast	Lake States and Corn Belt	Southeast	United States
COSTS PER ACRE				
Variable	$60.70	$46.59	$56.96	$49.51
Seed	7.08	6.08	6.41	6.21
Fertilizer	23.03	18.90	23.17	20.01
Lime	2.42	.72	2.45	1.17
Chemicals [1]	.09	.26	.24	.24
Custom operations [2]	5.40	3.52	3.87	3.70
All labor	9.67	6.88	8.56	7.38
Fuel and lubrication	4.91	3.85	4.64	4.07
Repairs	5.09	4.14	4.99	4.37
Interest	3.01	2.24	2.63	2.36
Machinery ownership	21.46	19.40	18.77	19.38
Replacement	13.94	12.37	11.90	12.36
Interest	5.76	5.40	5.26	5.39
Taxes and insurance	1.76	1.63	1.61	1.63
General farm overhead	7.04	6.86	5.47	6.62
Management [3]	8.92	7.29	8.12	7.55
Total, excluding land	98.12	80.14	89.32	83.06
Land allocation: Composite with—				
Current value [4]	88.83	68.91	43.68	64.83
Average acquisition value [5]	35.97	38.54	24.10	35.43
COSTS PER BUSHEL				
Variable	1.86	1.29	1.87	1.42
Machinery ownership	.66	.54	.61	.56
Farm overhead	.21	.19	.18	.19
Management	.27	.20	.27	.22
Total, excluding land	3.00	2.22	2.93	2.39
Land allocation: Composite with—				
Current value	2.72	1.91	1.43	1.87
Average acquisition value	1.10	1.07	.79	1.02
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER				
Cost to share renter [6]	(7)	3.53	3.90	3.57
Cost to cash renter [8]	3.92	3.62	4.19	3.85
Weighted renter cost [9]	3.92	3.54	4.04	3.63
Yield per acre (bushels)	32.7	36.1	30.5	34.8
Percent of U.S. production	5.0	77.7	15.8	98.5

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used or owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Not applicable.
[8] Cash-renter costs including cash rent divided by total yield.
[9] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Yields were above normal in 1977 for all regions. Average nonland costs per bushel were $2.13, and all costs to renters were $3.18.

Total nonland costs increased in 1978 by $1.41 per acre (1.7 percent), despite a drop in variable costs of $1.45 per acre due primarily to a decrease in the application rate of fertilizer. Machinery ownership costs, however, increased by $2.33 per acre (13.7 percent). Land costs increased 17 to 19 percent on a per acre basis in 1978—due mainly to a 35-percent increase in returns to landowners with share leases as a result of higher wheat prices.

Yields of Soft Red Winter wheat were down slightly in 1978 in all regions, but remained near the 5-year (1974–78) average. Nonland costs of $2.39 per bushel were 26 cents higher than in 1977. Land costs per bushel were up 29 to 32 percent due to the increase in share-renter

costs mentioned above. Costs to a renter increased 45 cents in 1978 to $3.63 per bushel.

Hard Red Winter wheat, the major type of wheat produced in the United States, accounts for 45 to 50 percent of the total U.S. wheat production; its costs of production in 1977 and 1978 are shown in tables 19 and 20. It is grown primarily in the Great Plains, from Texas to Montana. There is also significant acreage in California and Arizona.[17]

TABLE 19.—HARD RED WINTER WHEAT AND ALL WHEAT: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1977

Cost item	Central Plains	Southern Plains	Northern Plains	South-west	United States	All wheat total
COSTS PER ACRE						
Variable	$30.59	$34.87	$29.14	$105.72	$33.79	$37.24
Seed	2.27	2.79	2.73	8.94	2.66	3.93
Fertilizer	5.62	8.19	4.76	23.48	6.87	9.28
Lime	NA	NA	NA	NA	NA	.13
Chemicals [1]	.64	1.22	1.08	4.89	.99	1.14
Custom operations [2]	2.23	3.10	2.51	6.33	2.66	2.82
All labor	8.50	8.07	6.65	19.23	8.44	8.02
Fuel and lubrication	4.91	5.13	4.17	5.50	4.93	4.80
Repairs	5.25	5.07	5.42	6.43	5.23	5.24
Purchased irrigation water	NA	NA	.69	26.90	.73	.50
Interest	1.17	1.30	1.13	4.02	1.28	1.38
Machinery ownership	17.89	17.66	19.71	20.95	18.06	18.69
Replacement	11.93	11.98	12.90	14.20	12.10	12.49
Interest	4.42	4.23	5.05	4.99	4.43	4.61
Taxes and insurance	1.54	1.45	1.76	1.76	1.53	1.59
General farm overhead	6.23	4.86	5.79	12.64	5.98	6.16
Management [3]	5.47	5.74	5.46	13.93	5.78	6.21
Total, exlcluding land	60.18	63.13	60.10	153.24	63.61	68.30
Land allocation:						
Composite with—						
Current value [4]	34.62	25.82	38.26	71.45	32.82	38.25
Average acquisition value [5]	19.54	14.25	18.13	51.35	18.35	20.97
COSTS PER BUSHEL						
Variable	1.21	1.54	1.05	2.19	1.34	1.34
Machinery ownership	.70	.78	.71	.43	.71	.68
Farm overhead	.24	.21	.21	.26	.24	.22
Management	.22	25	.20	.29	.23	.22
Total, excluding land	2.37	2.78	2.17	3.17	2.52	2.46
Land allocation:						
Composite with—						
Current value	1.36	1.14	1.38	1.48	1.30	1.38
Average acquisition value	.77	.63	.65	1.06	.73	.76
Value of pasture	.06	.26	NA	NA	.11	.06
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER						
Cost to share renter [6]	3.55	3.96	3.16	4.34	3.66	3.63
Cost to cash renter [7]	3.61	3.47	3.20	4.30	3.62	3.68
Weighted renter cost [8]	3.56	3.85	3.17	4.32	3.65	3.64
Yield per acre (bushels)	25.4	22.7	27.7	48.3	25.2	27.7
Percent of U.S. production	52.1	30.4	10.4	4.6	97.5	96.4

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemcials, the cost of chemcials in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

NA=Not applicable.

[17] States in the Hard Red Winter wheat regions: Central Plains—Colorado, Kansas, Nebraska, and South Dakota; Southern Plains—New Mexico, Oklahoma, and Texas; Northern Plains—Idaho, Montana, and Wyoming; the Southwest—Arizona and California.

TABLE 20.—HARD RED WINTER AND ALL WHEAT: PRELIMINARY PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1978

Cost item	Central Plains	Southern Plains	Northern Plains	South-west	United States	All wheat total
COSTS PER ACRE						
Variable	$31.10	$34.67	$32.08	$113.09	$34.14	$37.64
Seed	2.26	2.79	2.75	9.19	2.64	3.89
Fertilizer	4.27	5.80	6.18	18.38	5.28	7.81
Lime	NA	NA	NA	NA	NA	.12
Chemicals [1]	.61	1.21	1.05	4.74	.94	1.16
Custom operations [2]	2.36	3.03	2.66	7.49	2.72	2.92
All labor	9.14	9.01	7.19	21.60	9.15	8.63
Fuel and lubrication	5.37	5.80	4.25	6.24	5.40	5.19
Repairs	5.81	5.65	5.91	7.63	5.81	5.89
Purchased irrigation water	NA	NA	.73	33.16	.80	.55
Interest	1.28	1.38	1.36	4.66	1.40	1.48
Machinery ownership	21.23	20.91	23.27	27.63	21.49	22.19
Replacement	13.52	13.64	14.51	17.69	13.76	14.15
Interest	5.90	5.59	6.71	7.63	5.93	6.17
Taxes and insurance	1.81	1.68	2.05	2.31	1.80	1.87
General farm overhead	6.63	5.17	6.16	13.44	6.36	6.55
Management [3]	5.90	6.08	6.15	15.42	6.20	6.64
Total, excluding land	64.86	66.83	67.66	169.58	68.19	73.02
Land allocation:						
Composite with—						
Current value [4]	38.72	29.02	44.36	86.28	37.27	43.68
Average acquisition value [5]	23.96	15.96	21.71	62.39	21.96	25.07
COSTS PER BUSHEL						
Variable	1.13	1.66	1.00	1.84	1.28	1.27
Machinery ownerhsip	.77	1.00	.73	.45	.80	.75
Farm overhead	.24	.25	.19	.22	.24	.22
Management	.21	.29	.19	.25	.23	.22
Total, excluding land	2.35	3.20	2.11	2.76	2.55	2.46
Land allocation:						
Composite with—						
Current value	1.40	1.39	1.39	1.41	1.40	1.47
Average acquisition value	.87	.76	.68	1.02	.82	.84
Value of pasture	.06	.35	NA	NA	.12	.06
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER						
Cost to share renter [6]	3.48	4.65	3.09	3.66	3.73	3.62
Cost to cash renter [7]	3.44	3.73	3.13	3.72	3.57	3.61
Weighted renter cost [8]	3.48	4.44	3.10	3.69	3.71	3.62
Yield per acre (bushels)	27.6	20.9	32.0	61.4	26.7	29.7
Percent of U.S. production	54.7	24.6	13.3	4.9	97.5	96.9

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under customs operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

NA=Not applicable.

The Southwest has consistently had the highest per acre land and nonland costs because most of the acreage is irrigated. The Central Plains, producing over half of the Hard Red Winter wheat, usually has some of the lowest per acre nonland costs. For 1977 and 1978, the Northern Plains had the lowest per bushel nonland costs. There is very little irrigation in this region, but its yields are generally better than in other dryland regions; its per acre costs are average.

Winter grazing of wheat pasture is common in Texas and Oklahoma. Some grazing also occurs in Kansas. The amount of winter grazing varies from year to year due both to weather and to price factors. No reliable data are available on the overall incidence of winter grazing on the value of the pasture, so the estimate for the value of wheat pasture per acre is not adjusted on an annual basis.

Yields of Hard Red Winter wheat in 1977 were about average in the Central and Southern Plains, but were down slightly in the Northern Plains and down considerably in the Southwest. The U.S. average nonland cost was $2.41 per bushel, and the cost to the average renter was $3.54 after giving credit for the value of Winter wheat pasture.

The U.S. average yield per planted acre in 1978 was about 1 bushel higher than the 5-year (1974–78) average. Yields were slightly lower in the Southern Plains, but still above the 5-year average. Yields were poor in the Southwest in 1977, but were above average in 1978, showing a 13.1-bushel-per-acre increase. Yields were better than average in the Central and Northern Plains regions.

Variable costs rose by only 35 cents per acre in 1978. Increases in the costs of most items were offset by less use of fertilizer and slightly lower prices for seed and chemicals. Machinery ownership costs rose $3.43 per acre, or 19 percent. Per acre land costs rose by 14 to 20 percent due to greater returns to landowners under share-rental arrangements.

Per bushel nonland costs decreased slightly in the Central and Northern Plains and decreased considerably in the Southwest because of improved yields, but increased in the Southern Plains. Per bushel nonland costs for the Nation increased by only 2 cents per bushel to $2.43 after subtracting the value of winter pasture.

Per bushel land costs increased in all regions except the Southwest. Per bushel land costs for the Nation were up by 8 to 12 percent. Costs to an average renter increased by 5 cents to $3.59 after the value of wheat pasture was subtracted.

Variable costs for all wheat in the United States increased by only 40 cents per acre in 1978, but machinery ownership costs increased $3.50 per acre. Total nonland costs increased $4.72 per acre, or 6.9 percent.

Land costs per acre increased 14 to 20 percent. A leading factor in this increase was the higher returns to landowners under share-rental arrangements due to both higher yields and higher wheat prices in 1978.

The yield for all wheat in the United States averaged 29.7 bushels per planted acre in 1978, 2 bushels higher than in 1977 and the highest since 1973. The increase in yield offset the cost increase so that nonland costs per bushel were $2.46 each year before allowing for the value of wheat pasture and $2.40 after subtracting the value of pasture. Total costs to renters were 2 cents lower in 1978, at $3.56 per bushel after adjusting for the value of wheat pasture.

Soybeans

The costs of production for soybeans in 1977 and 1978 are shown in tables 21 and 22.[18] The Lake States and Corn Belt region produces

[18] States in the soybean-producing regions are: Lakes States and Corn Belt—Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin; Northern Plains—Kansas, Nebraska, and South Dakota; Southeast—Alabama, Georgia, Kentucky, North Carolina, Virginia, South Carolina, and Tennessee; Delta—Arkansas, Louisiana, and Mississippi.

about 65 percent of the U.S. soybean crop. That region usually has the lowest nonland costs per bushel, but has the highest land costs per bushel. By contrast, the Southeast generally has the highest nonland cost per bushel, but low per bushel land costs.[19]

TABLE 21.—SOYBEANS: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1977

Cost item	Lake States and Corn Belt	Northern Plains	Southeast	Delta	United States
COSTS PER ACRE					
Variable	$46.03	$38.70	$70.29	$60.52	$52.82
Seed	8.88	8.26	10.24	10.82	9.48
Fertilizer	3.29	1.78	13.22	5.31	5.36
Lime	.55	.38	2.04	.69	.83
Chemicals [1]	8.34	4.88	11.44	11.42	9.34
Custom operations [2]	2.79	3.04	4.66	3.03	3.17
All labor	9.65	9.01	12.76	12.47	10.72
Fuel and lubrication	5.67	5.15	7.07	7.28	6.22
Repairs	5.62	5.29	6.79	7.59	6.20
Interest	1.24	.91	2.07	1.91	1.50
Machinery ownership	22.93	20.07	24.89	28.61	24.28
Replacement	15.32	13.33	16.72	19.34	16.28
Interest	5.69	5.00	6.08	7.02	5.99
Taxes and insurance	1.92	1.74	2.09	2.25	2.01
General farm overhead	6.52	7.92	5.83	6.24	6.40
Management [3]	7.55	6.67	10.10	9.54	8.35
Total, excluding land	83.03	73.36	111.11	104.91	91.85
Land allocation:					
Composite with—					
Current value [4]	100.66	63.88	42.96	40.84	77.11
Average acquisition value [5]	67.86	49.17	27.90	26.13	51.79
COSTS PER BUSHEL					
Variable	1.30	1.22	3.25	2.73	1.75
Machinery ownership	.65	.64	1.15	1.29	.80
Farm overhead	.18	.25	.27	.28	.21
Management	.21	.21	.47	.43	.28
Total, excluding land	2.34	2.32	5.14	4.73	3.04
Land allocation:					
Composite with—					
Current value	2.84	2.02	1.99	1.84	2.55
Average acquisition value	1.91	1.56	1.29	1.18	1.71
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER					
Cost to share renter [6]	3.98	3.80	6.61	6.17	4.46
Cost to cash renter [7]	4.35	3.42	7.27	6.37	5.54
Weighted renter cost [8]	4.05	3.76	6.95	6.29	4.79
Yield per acre (bushels)	35.5	31.6	21.6	22.2	30.2
Percent of U.S. production	66.0	4.4	12.1	14.0	96.5

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average or share renter and cash renter based on prevailing tenure arrangements in 1974.

[19] It is reasonable to expect that if per unit nonland costs in a region are low, then land costs will be high, or vice versa. The reason is that land receives a residual return after other costs are paid. If, over several years, returns to land are high, land prices and land rent are bid up and land cost rises.

TABLE 22.—SOYBEANS: PRELIMINARY PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, SPECIFIED REGIONS, 1978

Cost item	Lake States and Corn Belt	Northern Plains	Southeast	Delta	United States
COSTS PER ACRE					
Variable	$47.35	$38.74	$72.00	$61.85	$54.17
Seed	8.89	7.89	9.39	10.85	9.30
Fertilizer	3.38	1.37	14.40	5.38	5.68
Lime	.66	.45	2.23	.59	.92
Chemicals [1]	7.82	4.65	10.75	10.71	8.74
Custom operations [2]	2.94	3.29	5.14	3.20	3.41
All labor	10.28	9.26	13.37	13.44	11.39
Fuel and lubrication	5.89	5.20	7.20	7.37	6.37
Repairs	6.10	5.62	7.21	8.21	6.68
Interest	1.39	1.01	2.31	2.10	1.68
Machinery ownership	26.11	22.51	28.07	32.33	27.46
Replacement	16.65	14.29	18.12	20.97	17.61
Interest	7.29	6.30	7.61	8.83	7.59
Taxes and insurance	2.17	1.92	2.34	2.53	2.26
General farm overhead	6.99	8.49	6.25	6.69	6.86
Management [3]	8.05	6.97	10.63	10.09	8.85
Total, excluding land	88.50	76.71	116.95	110.96	97.34
Land allocation:					
Composite with—					
Current value [4]	105.56	59.64	46.20	45.80	81.04
Average acquisition value [5]	70.62	46.29	30.45	29.01	54.15
COSTS PER BUSHEL					
Variable	1.42	1.52	3.22	2.69	1.87
Machinery ownership	.79	.88	1.25	1.40	.95
Farm overhead	.21	.33	.28	.29	.24
Management	.24	.27	.47	.44	.31
Total, excluding land	2.66	3.00	5.22	4.82	3.37
Land allocation:					
Composite with—					
Current value	3.17	2.34	2.06	1.99	2.80
Average acquisition value	2.12	1.82	1.36	1.26	1.87
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER					
Cost to share renter [6]	4.61	4.96	6.91	6.30	5.05
Cost to cash renter [7]	4.86	4.07	7.19	6.64	5.93
Weighted renter cost [8]	4.66	4.86	7.06	6.50	5.32
Yield per acre (bushels)	33.3	25.5	22.4	23.0	28.9
Percent of U.S. production	63.9	4.4	13.8	14.4	96.5

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangemens in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

The record 1977 soybean crop was 33 percent higher than the 1976 crop. Yields were good in all regions except the Southeast where drought reduced yields. Consequently, the Southeast per bushel nonland costs in 1977 were twice as high as the per bushel nonland costs in either the Lake States and Corn Belt or the Northern Plains.

Per acre variable costs increased by small margins in all regions in 1978; the U.S. average increase was $1.35 per acre, or 2.6 percent. Although seed costs were slightly lower and chemical costs were down 6.4 percent, all other costs increased. Machinery ownership costs increased $3.18 per acre, or 13 percent. Total nonland costs increased by $5.49 per acre, or 6 percent.

The U.S. average yield per planted acre in 1978 was down by 1.3 bushels. Yields were lower than in 1977 in both the Lake States and

Corn Belt and in the Northern Plains. The Southeast and Delta had slightly higher yields than in 1977.

Costs per bushel, both nonland and land, were up in all regions in 1978. The U.S. average increase in nonland costs was 33 cents per bushel, or 10.9 percent. Land costs increased about 9 percent per bushel. The national average costs for renters increased from $4.79 per bushel in 1977 to $5.32 in 1978, an increase of 11 percent.

Flaxseed

The costs of production for flaxseed in 1977 and 1978 are shown in table 23. Over 90 percent of U.S. flaxseed is produced in North Dakota, South Dakota, and Minnesota. The total harvested acreage of flaxseed declined each year between 1973 and 1976, but then increased substantially in 1977.

TABLE 23.—FLAXSEED: PRODUCTION COSTS PER PLANTED ACRE AND PER BUSHEL BY COST ITEM, 1977–78

Cost item	1977	1978 (preliminary)
COSTS PER ACRE		
Variable	$26.36	$27.33
Seed	4.75	4.84
Fertilizer	.96	.96
Chemicals [1]	1.96	1.88
Custom operations [2]	2.33	2.45
All labor	6.60	6.85
Fuel and lubrication	4.34	4.47
Repairs	4.79	5.20
Miscellaneous	.06	.05
Interest	.57	.63
Machinery ownership	17.00	19.51
Replacement	11.32	12.43
Interest	4.24	5.44
Taxes and insurance	1.44	1.64
General farm overhead	4.83	5.13
Management [3]	4.82	5.20
Total, excluding land	53.01	57.17
Land allocation:		
Composite with—		
Current value [4]	28.13	32.23
Average acquisition value [5]	15.12	18.15
COSTS PER BUSHEL		
Variable	2.46	2.20
Machinery ownership	1.59	1.57
Farm overhead	.45	.42
Management	.45	.42
Total, excluding land	4.95	4.61
Land allocation:		
Composite with—		
Current value	2.63	2.60
Average acquisition value	1.41	1.46
TOTAL PER BUSHEL COSTS OF PRODUCTION TO A RENTER		
Cost to share renter [6]	7.17	6.78
Cost to cash renter [7]	7.72	7.10
Weighted renter cost [8]	7.34	6.87
Yield per acre (bushels)	10.7	12.4
Percent of U.S. production	99.0	98.3

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Yields of flaxseed in 1977 were the highest since 1972, averaging 10.7 bushels per planted acre. This yield resulted in a nonland cost of $4.95 per bushel and a cost to the average renter of $7.34 per bushel.

Per acre costs increased in 1978. Total nonland costs were up by 7.8 percent, or $4.16 per acre, as variable costs increased by 3.7 percent and machinery ownership costs by 14.8 percent.

Yields of flaxseed were even higher in 1978 than in 1977 and were the highest since 1969. The U.S. average yield was 12.4 bushels per planted acre, up 1.7 bushels, or 16 percent, from 1977.

Both land and nonland costs per bushel declined in 1978 as a result of the high yields. Nonland costs fell by 34 cents to $4.61 per bushel as total costs to the average renter fell by 47 cents to $6.87 per bushel.

Peanuts

A survey of 1977 production practices for peanuts was made in 1978. That survey's data were used in developing the costs of production presented in tables 24 and 25.

As a result of the survey, cost estimates for 1977 and 1978 are considerably higher than estimates presented in earlier cost of production reports.[20] Both land and nonland costs in the three growing regions are affected.[21] Variable production costs per acre for 1977 were $257.95—about 21 percent higher than the estimate of a year ago. The major source of difference is in the estimates for Virginia and North Carolina, for which the current per acre variable cost is 30 percent greater than last year's estimate. The difference results primarily from improved estimates of costs for lime, gypsum, chemicals, and drying.

Increases in the Southeast of almost $50 per acre resulted from higher costs for seed, fuel, machinery repairs, and costs associated with irrigation. Thirty-five percent of the peanut acreage in Georgia and 10 percent of the acreage in Alabama were irrigated in 1977. Both the variable costs and machinery ownership costs were raised by including the irrigation costs. There has been a rapid increase in irrigated acreage the last 3 years. Previous cost estimates did not include irrigation costs.

Per acre variable costs for the Southern Plains were $21 higher than those recorded in earlier reports. The increase is due to higher estimates of chemical usage and higher costs of labor and machinery operations.

Land allocation costs were above previous estimates. The present estimate of composite land costs for 1977 using current land values averages almost $100 per acre for the United States—$23 higher than the previous estimate. The big difference came in the Southeast where the estimate of per acre land costs was increased from $86.58 to $122.48, or 41 percent. Composite estimates are a combination of cash rent, share rent, and land ownership costs and include the value of land as well as the value placed on the peanut allotment. It is very difficult to separate the values of the latter two components.

Peanut land with an allotment cash rented in 1977 for an average of $196 per acre in Georgia, $97 in Alabama, $39 in Oklahoma, $33 in Texas, $116 in North Carolina, and $121 in Virginia. Most peanuts

[20] Compared to "Cost of Producing Selected Crops in the United States—1976, 1977, and Projections for 1978." Senate Committee on Agriculture, Nutrition, and Forestry, Committee Print No. 24-607, March 1978, pp. 43-45.

[21] States in the peanut-producing regions are: Virginia and North Carolina; Southeast—Alabama, Florida, and Georgia; Southern Plains—Oklahoma and Texas.

are grown on rented allotments; peanut acreage rented in 1977 accounted for 78 percent of the acreage in Virginia and North Carolina, 73 percent in the Southeast, and 60 percent in the Southern Plains.

Peanut hay was utilized to some degree in all areas. However, this varied from approximately 80 percent in the Southern Plains to only 19 percent in Virginia and North Carolina. The value of peanut hay per pound of peanuts, included in tables 24 and 25, averaged only one-half cent per pound of peanuts.

TABLE 24.—PEANUTS: PRODUCTION COSTS PER PLANTED ACRE AND PER POUND BY COST ITEM, SPECIFIED REGIONS, 1977

Cost item	Virginia and North Carolina	Southeast	Southern Plains	United States
COSTS PER ACRE				
Variable	$269.29	$296.76	$178.12	$257.95
Seed	47.44	63.06	38.94	53.34
Fertilizer	12.24	24.59	12.58	18.92
Lime and gypsum	30.90	20.63	.07	16.64
Chemicals [1]	68.99	73.09	27.56	59.37
Custom operations [2]	2.94	4.66	4.34	4.26
All labor	27.00	30.88	33.70	30.98
Fuel and lubrication	14.47	24.21	26.91	23.21
Repairs	13.62	20.63	17.40	18.43
Drying	45.52	26.51	12.80	26.06
Interest	6.17	8.50	3.82	6.74
Machinery ownership	41.68	54.38	51.35	51.21
Replacement	27.36	35.86	33.85	33.74
Interest	10.58	13.77	13.08	12.99
Taxes and insurance	3.74	4.75	4.42	4.48
General farm overhead	17.04	18.37	9.95	15.73
Management [3]	32.80	36.95	23.94	32.49
Total, excluding land	360.81	406.46	263.36	357.38
Land allocation:				
Composite with—				
Current value [4]	113.93	122.48	48.31	99.78
Average acquisition value [5]	104.77	114.31	37.49	90.68
COSTS PER POUND				
Variable	.100	.105	.115	.106
Machinery ownership	.016	.019	.033	.021
Farm overhead	.006	.007	.007	.007
Management	.012	.013	.016	.013
Total, excluding land	.134	.144	.171	.147
Land allocation:				
Composite with—				
Current value	.042	.043	.031	.041
Average acquisition value	.039	.040	.024	.037
Value of peanut hay	.002	.005	.009	.005
TOTAL PER POUND COSTS OF PRODUCTION TO A RENTER				
Cost to share renter [6]	.176	.177	.222	.195
Cost to cash renter [7]	.178	.198	.197	.194
Weighted renter cost [8]	.177	.196	.210	.194
Yield per acre (pounds)	2,691	2,817	1,544	2,431
Percent of U.S. production	19.8	60.6	17.8	98.2

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

TABLE 25.—PEANUTS: PRELIMINARY PRODUCTION COSTS PER PLANTED ACRE AND PER POUND BY COST ITEM, SPECIFIED REGIONS, 1978

Cost item	Virginia and North Carolina	Southeast	Southern Plains	United States
COSTS PER ACRE				
Variable	$277.04	$305.12	$180.83	$264.50
Seed	50.24	64.19	38.88	54.42
Fertilizer	12.46	24.32	12.48	18.79
Lime and gypsum	32.19	22.84	.09	18.03
Chemicals [1]	64.66	68.57	25.85	55.65
Custom operations [2]	3.10	4.92	4.52	4.47
All labor	27.68	32.21	35.48	32.33
Fuel and lubrication	14.90	25.86	27.27	24.28
Repairs	14.81	22.43	18.86	20.02
Drying	50.18	30.58	13.19	29.17
Interest	6.82	9.20	4.21	7.34
Machinery ownership	47.39	61.64	58.19	58.07
Replacement	29.74	38.99	36.67	36.65
Interest	13.42	17.26	16.53	16.35
Taxes and insurance	4.23	5.39	4.99	5.07
General farm overhead	18.36	20.90	10.71	17.52
Management [3]	34.28	38.77	24.97	34.01
Total, excluding land	377.07	426.43	274.70	374.10
Land allocation:				
Composite with—				
Current value [4]	121.17	140.24	48.28	110.48
Average acquisition value [5]	111.76	131.37	36.36	100.65
COSTS PER POUND				
Variable	.098	.098	.121	.102
Machinery ownership	.017	.020	.039	.022
Farm overhead	.006	.007	.007	.007
Management	.012	.012	.017	.013
Total, excluding land	.133	.137	.184	.144
Land allocation:				
Composite with—				
Current value	.043	.045	.032	.043
Average acquisition value	.039	.042	.024	.039
Value of peanut hay	.002	.005	.009	.005
TOTAL PER POUND COSTS OF PRODUCTION TO A RENTER				
Cost to share renter [6]	.175	.184	.244	.205
Cost to cash renter [7]	.177	.193	.209	.191
Weighted renter cost [8]	.176	.192	.227	.195
Yield per acre (pounds)	2,844	3,102	1,496	2,596
Percent of U.S. production	19.5	62.5	16.2	98.2

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes customs application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost dividend by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

Per acre costs and yields were highest in the Southeast in 1977. Costs per pound, excluding land, were lowest in Virginia and North Carolina and highest in the Southern Plains. Costs for land, both per acre and per pound, were lower in the Southern Plains. Allotment rental rates tend to be higher in areas where nonland peanut production costs per pound are lower. When costs of land rental and allotment are included, costs per pound tend to be more uniform across regions.

Per acre variable costs increased in all regions in 1978, with the increase averaging $6.55, or 2.5 percent, for the United States. This lower-than-average rate of increase was due primarily to the changes in fertilizer and chemical costs, which together made up almost 35 percent of the total variable costs in peanut production. Chemical costs declined by 6 percent in 1978, while fertilizer costs increased by 3.5 percent.

Per acre machinery ownership costs increased by 13 percent in 1978, and total nonland costs increased by $16.72 per acre, or 4.7 percent. Nonland costs per pound decreased in the two eastern regions due to yield increases of 5 to 10 percent. In the Southern Plains, yields were 3 percent lower in 1978; therefore, nonland costs per pound increased 7.6 percent.

Renters' total costs per pound also declined in the two eastern regions, but increased in the Southern Plains. On the average, renters' costs in 1978 in the Southern Plains exceeded the average prices received for peanuts.

Rice

The costs of production for rice in 1977 and 1978 are shown in tables 26 and 27.[22]

TABLE 26.—RICE: PRODUCTION COSTS PER PLANTED ACRE AND PER HUNDREDWEIGHT BY COST ITEM, SPECIFIED REGIONS, 1977

Cost item	Arkansas (non-Delta)	Mississippi Delta	Gulf Coast	California	United States
COSTS PER ACRE					
Variable	$229.61	$209.68	$229.81	$256.15	$230.35
Seed	20.02	19.44	19.97	19.72	19.87
Fertilizer	23.25	18.60	33.39	37.48	28.69
Chemcials [1]	21.74	22.46	21.76	14.66	20.89
Custom operations [2]	16.48	17.61	19.81	21.90	18.77
All labor	49.20	28.52	46.95	53.14	45.73
Fuel and lubrication	42.59	43.41	34.12	38.24	38.61
Repairs	18.23	18.97	15.06	25.87	18.08
Drying	28.99	26.33	25.03	29.02	26.96
Miscellaneous	3.43	9.64	7.37	9.67	6.83
Interest	5.68	4.70	6.35	6.45	5.92
Machinery ownership	56.87	49.41	40.38	50.09	48.02
Replacement	37.86	33.73	27.38	33.99	32.39
Interest	14.41	11.98	9.90	11.98	11.85
Taxes and insurance	4.60	3.70	3.10	4.12	3.78
General farm overhead	19.21	17.20	17.71	27.59	19.44
Management [3]	30.57	27.63	28.79	33.38	29.78
Total, excluding land	336.26	303.92	316.69	367.21	327.59
Land allocation:					
Composite with—					
Current value [4]	100.69	78.61	62.84	117.25	84.05
Average acquisition value [5]	72.74	51.19	46.46	91.81	61.30
COSTS PER HUNDREDWEIGHT					
Variable	5.28	5.21	5.52	4.41	5.21
Machinery ownership	1.31	1.23	.97	.86	1.09
Farm overhead	.44	.43	.43	.48	.44
Management	.70	.69	.69	.57	.67
Total, excluding land	7.73	7.56	7.61	6.32	7.41
Land allocation:					
Composite with—					
Current value	2.31	1.96	1.51	2.02	1.90
Average acquisition value	1.67	1.27	1.12	1.58	1.39

See footnotes at end of table.

[22] Rice-growing regions include: the non-Delta part of Arkansas; Mississippi Delta—parts of Arkansas, Missouri, Mississippi, and Louisiana; the Gulf Coast—southwest Louisiana and the Gulf Coast of Texas; and California.

TABLE 26.—RICE: PRODUCTION COSTS PER PLANTED ACRE AND PER HUNDREDWEIGHT BY COST ITEM, SPECIFIED REGIONS, 1977—Continued

Cost item	Arkansas (non-Delta)	Mississippi Delta	Gulf Coast	California	United States
TOTAL PER HUNDREDWEIGHT COSTS OF PRODUCTION TO A RENTER					
Cost to share renter [6]	$10.64	$10.37	$8.82	$8.71	$9.31
Yield per acre (hundredweight)	43.50	40.20	41.62	58.10	44.23
Percent of U.S. production	29.6	13.5	38.9	18.0	100.0

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on owner-operated and share-rented land charge methods only. Weights estimated by experts in the area.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.

TABLE 27.—RICE: PRELIMINARY PRODUCTION COSTS PER PLANTED ACRE AND PER HUNDREDWEIGHT BY COST ITEM, SPECIFIED REGIONS, 1978

Cost item	Arkansas (non-Delta)	Mississippi Delta	Gulf Coast	California	United States
COSTS PER ACRE					
Variable	$224.30	$232.13	$231.32	$258.68	$234.22
Seed	26.60	26.60	21.34	28.50	25.07
Fertilizer	23.74	18.84	32.58	32.13	27.04
Chemicals [1]	14.19	21.07	23.90	13.75	19.15
Customs operations [2]	13.65	18.11	20.47	18.06	17.86
All labor	49.45	34.41	34.90	54.13	41.56
Fuel and lubrication	34.23	44.61	34.21	38.63	37.40
Repairs	19.64	20.62	16.33	28.12	20.10
Drying	32.55	30.83	31.53	28.61	31.14
Miscellaneous	4.01	11.37	9.40	9.34	8.51
Interest	6.04	5.67	6.66	7.41	6.39
Machinery ownership	60.46	56.10	45.77	57.51	53.80
Replacement	38.96	36.66	29.74	36.95	34.86
Interest	16.78	15.26	12.52	15.88	14.78
Taxes and insurance	4.72	4.18	3.51	4.68	4.16
General farm overhead	21.40	19.17	20.21	30.74	21.98
Management [3]	30.62	30.74	29.73	34.69	31.00
Total, excluding land	336.78	338.14	327.03	381.62	341.00
Land allocation: ,					
Composite with—					
Current value [4]	98.46	78.30	58.85	104.42	80.79
Average acquisition value [5]	68.92	49.17	41.43	85.75	57.36
COSTS PER HUNDREDWEIGHT					
Variable	4.92	5.35	5.47	4.92	5.20
Machinery ownership	1.33	1.29	1.08	10.0	1.19
Farm overhead	.47	.44	.48	.59	.49
Management [3]	.67	.71	.71	.66	.69
Total, excluding land	7.39	7.79	7.74	7.26	7.57
Land allocation:					
Composite with—					
Current value	2.16	1.80	1.39	1.99	1.79
Average acqui. ition value	1.51	1.13	.98	1.63	1.27
TOTAL PER HUNDREDWEIGHT COSTS OF PRODUCTION TO A RENTER					
Cost to share renter [6]	10.47	11.50	9.31	9.06	9.68
Yield per acre (hundredweight)	45.57	43.40	42.26	52.60	45.05
Percent of U.S. production	25.3	22.8	32.8	19.1	100.0

[1] Includes herbicides, insecticides, and redenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on owner-operated and share-rented land charge methods only. Weights estimated by experts in the area.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.

Per acre nonland costs were about 10 to 20 percent higher in California than in the other rice-producing areas, but California yields tended to be 20 to 30 percent higher as well. Hence, nonland costs per hundredweight were lowest in California. Nonland costs were fairly uniform in the other three producing areas.

The U.S. average per acre yield in 1978 was about 82 pounds above the 1977 yield. Yields for 1978 were lower in California and higher in the other areas.

Total per acre nonland costs for the United States increased by 4 percent. The U.S. average per acre variable costs increased in 1978 by $3.87, or 1.7 percent. Lower fertilizer and chemical prices offset other cost increases. Machinery ownership costs increased by $5.78 per acre, or 12 percent.

Per acre land costs declined due to declines in returns to landowners under share-rental arrangements, largely as a result of lower prices for rice.

Since per acre costs generally increased more in 1978 than did yields, costs per hundredweight increased in all regions except Arkansas. In Arkansas, a 4.8 percent yield increase with practically no cost increases resulted in lower per unit costs.

Only costs to share renters were estimated, since cash renting is seldom practiced in rice production because of Government programs. Costs to share renters rose in 1978 in all areas except Arkansas. For share renters, the national average cost increased by 37 cents per hundredweight in 1978, or about 4 percent.

PROJECTIONS FOR 1979

Cost and yield projections for 1979 for the 10 crops are presented in table 28. Costs for 1979 were projected from the 1978 national average cost using the price indexes and prices reported in tables 2 and 3. Costs were projected using different indexes for each category of input. Yields were projected by the USDA interagency yield projection committees.

Total nonland per acre costs are projected to increase from 6.6 percent for rice to 9.3 percent for flaxseed in 1979. The average projected increase for the four feed grains—corn, barley, oats, and sorghum—is 8.3 percent. Wheat costs are projected to increase about 8.5 percent. The projected rate of increase for the three oil crops (soybeans, peanuts, and cotton) is 8 percent.

Per acre variable costs are projected to increase in 1979 for all crops, varying over a small range from 4.5 percent for corn to 6.7 percent for barley. The simple average rate of increase for the 10 crops is 5.5 percent. The percentage of increase varies among crops due to different combinations of inputs. For example, fertilizer prices are expected to increase by approximately 1.1 percent in 1979, while tractors and self-propelled machinery prices are projected to increase by at least 8 percent. Hence, crops that use relatively more fertilizer in relationship to other inputs will experience lower rates of cost increase.

Per acre machinery ownership costs are expected to increase 14 percent for all crops; machinery prices are expected to increase 7.6 percent. The 14-percent increase results primarily because interest charges on machinery are based on average prices paid for machinery over the life of the machines and in part from increased interest rates expected for 1979. For instance, a big factor affecting the projected 1979 interest costs of machinery ownership is the 1975 price increase for machinery, which was greater than 20 percent.

Land charges are projected to increase by 7 percent in 1979 for all crops. Prices of farmland are expected to increase at rates similar to current rates of inflation, 8 to 10 percent. Returns to landlords with share leases are expected to increase less than 5 percent in 1979 because landowners also share in the costs of some inputs that are expected to increase in 1979. Returns to landowners under cash leases will probably increase about 7 percent, more than returns to share-rental landowners but less than the increase in land values. An average of the three land returns is approximately 7 percent for all crops.

Projected 1979 yields are below actual 1978 yields for all crops except rice, cotton, and peanuts. The 1979 yield projections are based on long-term yield trends, with some judgment added by the USDA yield projections committees for expected impacts of input prices and Government farm programs. Yields in 1978 were near or above aver-

age for all crops except cotton. The projected 1979 yield for rice is 4,600 pounds per acre, plus or minus 150 pounds. This compares to the actual 1978 yield of 4,505 pounds per acre. The projected U.S. average yield per planted acre of cotton is 451 pounds of lint, plus or minus 50 pounds. The 1979 yield is expected to be 16 percent higher than the U.S. average yield of 389 pounds per acre in 1978.

Peanut yields in 1979 are expected to be almost identical to the 1978 yields of 2,600 pounds per acre.

Yields expected in 1979 for the remaining seven crops are lower than those obtained in 1978. The projected decreases are: 1.7 percent for soybeans, 2.3 percent for sorghum, 3.1 percent for wheat, 5.4 percent for oats, 8.8 percent for corn, 10 percent for barley, and 14.5 percent for flaxseed.

As a result of these expected yield decreases and per acre cost increases, per unit costs are expected to increase in 1979 for all crops except cotton. Cotton yields are expected to increase more than cost increases, so nonland costs per pound of lint will decrease by 7.4 per cent. Nonland costs per pound of lint, after considering the value of cottonseed, averaged 57 cents per pound in 1978 compared with an expected 52.8 cents per pound in 1979 at the 451-pound yield level. Total costs to a renter, after subtracting the value of cottonseed, were approximately 71 cents per pound in 1978 compared with an expected 65 cents per pound in 1979.

Nonland costs per bushel of corn and total costs to the renter are both expected to increase by 17.6 percent in 1979. Nonland costs will likely increase by 27 cents to $1.80 per bushel, and total renter costs by 40 cents to $2.67 per bushel.

Nonland costs per bushel of grain sorghum are expected to increase by 12 percent, from $2 to $2.24. Total renters' costs will increase by 10.7 percent, from $2.81 to $3.11.

Nonland costs per bushel of barley are expected to increase 22 percent, from $1.79 to $2.18, and costs for renters to increase 21 percent, from $2.64 to $3.20. Nonland costs per bushel of oats will likely increase from $1.17 to $1.35, or 15 percent. Total renters' costs also will increase by 15 percent, from $1.94 to $2.23.

TABLE 28.—ALL CROPS: PROJECTED PRODUCTION COSTS PER PLANTED ACRE AND PER UNIT, BY COST ITEM, 1979

Cost item	Cotton	Corn	Grain sorghum	Barley	Oats
COSTS PER ACRE					
Variable	$172.65	$102.72	$61.12	$47.08	$29.31
Seed	6.96	11.51	3.74	4.94	2.94
Fertilizer	13.57	33.31	12.51	7.09	5.41
Lime and gypsum	.37	1.14	.01	.04	.68
Chemicals [1]	17.30	8.72	3.08	1.61	.26
Custom operations [2]	16.86	6.28	5.09	3.15	2.51
All labor	26.69	13.24	13.43	11.38	7.25
Fuel and lubrication	12.85	9.02	10.66	5.57	4.40
Repairs	21.23	8.47	9.19	7.07	5.16
Purchased irrigation water	17.09	.15	.47	4.88	NA
Ginning or drying	34.69	7.53	1.28	NA	NA
Miscellaneous	NA	NA	NA	.07	.11
Interest	5.04	3.35	1.66	1.28	.59

See footnotes at end of table.

TABLE 28.—ALL CROPS: PROJECTED PRODUCTION COSTS PER PLANTED ACRE AND PER UNIT, BY COST ITEM, 1979—Continued

Cost item	Cotton	Corn	Grain sorghum	Barley	Oats
Machinery ownership	$68.69	$36.32	$35.15	$27.07	$22.74
Replacement	43.83	22.01	21.46	16.17	13.53
Interest	19.67	11.22	10.75	8.55	7.01
Taxes and insurance	5.19	3.09	2.94	2.35	1.93
General farm overhead	12.62	11.02	7.17	7.05	5.76
Management [3]	25.40	15.00	10.34	8.12	5.75
Total, excluding land	279.36	165.06	113.78	89.32	63.29
Land allocation:					
Composite with—					
Current value [4]	58.08	92.59	39.60	47.91	57.39
Average acquisition value [5]	39.76	57.49	25.59	26.36	27.61
COSTS PER UNIT					
Variable	0.345–0.431	1.06–1.18	1.10–1.29	1.09–1.20	0.58–0.68
Machinery ownership	.137– .171	.37– .42	.64– .75	.63– .69	.44– .52
Farm overhead	.025– .032	.11– .13	.13– .15	.16– .18	.11– .13
Management	.051– .063	.16– .17	.19– .22	.19– .21	.11– .13
Total, excluding land	.558– .697	1.70–1.90	2.06–2.41	2.07–2.28	1.24–1.46
Land allocation:					
Composite with—					
Current value	.129	1.01	.77	1.16	1.22
Average acquisition value	.088	.62	.50	.64	.58
Value of secondary product	.100	NA	NA	NA	NA
TOTAL PER UNIT COSTS OF PRODUCTION TO A RENTER					
Cost to share renter [6]	.760	2.67	3.14	3.30	2.17
Cost to cash renter [7]	.723	2.66	2.91	2.96	2.35
Weighted renter cost [8]	.749	2.67	3.11	3.20	2.23
Yield per acre	401–501	87.1–97.1	47.3–55.3	39.2–43.2	43.2–51.2

Cost item	Wheat	Soybeans	Flaxseed	Peanuts	Rice
COSTS PER ACRE					
Variable	$39.69	$56.86	$29.04	$278.20	$245.59
Seed	4.05	9.67	5.03	56.60	26.07
Fertilizer	7.90	5.74	.97	19.00	27.35
Lime and gypsum	.12	.93	NA	18.23	NA
Chemicals [1]	1.21	9.13	1.96	58.11	20.00
Custom operations [2]	3.11	3.64	2.61	4.77	19.05
All labor	9.25	12.21	7.34	34.65	44.54
Fuel and lubrication	5.57	6.83	4.79	26.04	40.11
Repairs	6.34	7.19	5.59	21.53	21.62
Purchased irrigation water	.58	NA	NA	NA	NA
Ginning or drying	NA	NA	NA	31.21	33.32
Miscellaneous	NA	NA	.05	NA	6.83
Interest	1.56	1.52	.70	8.06	6.70
Machinery ownership	25.30	31.28	22.24	66.25	61.27
Replacement	15.22	18.94	13.37	39.42	37.50
Interest	7.90	9.71	6.96	20.92	18.92
Taxes and insurance	2.18	2.63	1.91	5.91	4.85
General farm overhead	7.04	7.38	5.52	18.84	23.63
Management [3]	7.20	9.55	5.68	36.33	33.05
Total, excluding land	79.23	105.07	62.48	399.62	363.54
Land allocation:					
Composite with—					
Current value [4]	46.69	86.63	34.45	118.10	86.36
Average acquisition value [5]	26.80	57.89	19.40	107.59	61.32

See footnotes at end of table.

TABLE 28.—ALL CROPS: PROJECTED PRODUCTION COSTS PER PLANTED ACRE AND PER UNIT, BY COST ITEM, 1979—Continued

Cost item	Wheat	Soybeans	Flaxseed	Peanuts	Rice
COSTS PER UNIT					
Variable	$1.29–$1.48	$1.87–$2.15	$2.50–$3.03	$0.101–$.113	$5.17–$5.52
Machinery ownership	.82–.95	1.03–1.19	1.92–2.32	.024–.027	1.29–1.38
Farm overhead	.23–.26	.24–.28	.48–.57	.007–.008	.50–.53
Management	.23–.27	.32–.36	.49–.59	.013–.015	.69–.74
Total, excluding land	2.57–2.96	3.46–3.98	5.39–6.51	.145–.163	7.65–8.17
Land allocation:					
Composite with—					
Current value	1.62	3.05	3.25	.045	1.88
Average acquisition value	.93	2.04	1.83	.041	1.33
Value of secondary product	.06	NA	NA	.005	NA
TOTAL PER UNIT COSTS OF PRODUCTION TO A RENTER					
Cost to share renter [6]	4.05	5.55	8.72	.218	10.03
Cost to cash renter [7]	4.01	6.47	9.03	.204	NA
Weighted renter cost [8]	4.04	5.83	8.81	.208	NA
Yield per acre	26.8–30.8	26.4–30.4	9.6–11.6	2,450–2,750	44.50–47.50

[1] Includes herbicides, insecticides, and rodenticides not otherwise included under custom operations.
[2] Includes custom application of crop chemicals, the cost of chemicals in some cases, and custom harvesting and hauling.
[3] Based on 10 percent of above costs.
[4] Based on prevailing tenure arrangements in 1974, reflecting actual combinations of cash rent, net share rent, and owner-operator land allocations, land values, land tax rates, and cash rents updated to current year.
[5] Same as footnote 4, except average value of cropland during the last 35 years is used for owner-operated land instead of current land value.
[6] Share-renter portion of cost divided by share-renter portion of crop.
[7] Cash-renter costs including cash rent divided by total yield.
[8] Weighted average of share renter and cash renter based on prevailing tenure arrangements in 1974.

NA=Not applicable.

Nonland and renters' costs per bushel of wheat are expected to increase by 12 to 13 percent. Nonland costs will increase from $2.40 in 1978—after the value of wheat pasture is deducted—to $2.71 while total renters' costs will go from $3.56 to $3.98.

Soybean production costs, excluding land, will likely increase by 10 percent in 1979, from $3.37 to $3.72 per bushel, and total renters' costs will increase by a similar percentage, from $5.32 to $5.83.

Per unit costs of producing flaxseed declined in 1978 due to good yields. If 1979 projected yields materialize, declining 14.5 percent, costs per unit will increase considerably. Nonland costs will go up by 29 percent, from $4.61 to $5.95 per bushel, and total renters' costs will increase by 28 percent, from $6.87 to $8.81.

Changes in per unit costs of raising peanuts are not expected to be as great, since no yield decline for peanuts is expected. Costs per pound will likely increase by about 6 to 7 percent. Nonland costs will increase from 14.4 cents to 15.4 cents per pound, and total renters' costs will likely rise from 19.5 to 20.8 cents per pound.

Rice yields are expected to increase slightly, thus dampening some of the effects of cost increases. Nonland costs of raising rice will likely increase from $7.57 to $7.91 per hundredweight, a 4-percent increase, and total renters' cost will increase from $9.68 to $10.03, also about 4 percent.

LIMITATIONS AND INTERPRETATION OF PRODUCTION COSTS

The average costs in the report are based on methods that provide total cost accounting for crop production on an average acre of land. Producing a crop requires combining a set of inputs some of which are used up each year—seed—some which last more than 1 year but become obsolete and wear out—machinery—and others that provide a flow of services when combined with other inputs—land. The cost estimates include the cost of all inputs used up, an allowance sufficient to replace the portion of depreciable inputs used up, and a return to remaining stock inputs sufficient to keep them employed in their present use. For these latter stock inputs—operator and family labor, management, and land—there is no precise guideline for selecting a level of return to value these resources in terms of their opportunity earnings. Therefore, total cost as measured for the individual commodities is a derived total.

The cost estimates are not adequate indicators for determining total farm income because no information is given with respect to total acreages or other enterprises produced in combination with the specific commodity. The cost estimates do not show the cash situation for farmers because the costs are not based on receipts and expenditures. While actual receipts and expenditures are of immediate concern to farmers in day-to-day operations, they are not good indicators of the longer run return to resources. The longer run return to resources is an important consideration for allocation of resources to agriculture and the maintenance of capacity to produce. The cost estimates reported to Congress in this report in fulfillment of the section 808 mandate are aimed at this latter aspect.

RESIDUAL RETURNS TO LAND

The average acre of corn in the United States in 1978 yielded 101 bushels—planted acre yield. It should be reasonable to expect a market price of $2.10 per bushel. This report shows three total cost figures for the national weighted average cost of producing that acre of corn:

Total cost—composite acquisition cost of land, $2.06.

Total cost—composite current cost of land, $2.39.

Total cost—average renter, $2.27.

It would be too simplified to conclude that corn is being produced below the total cost of production. What the comparison of cost with price does indicate is that some of the resources which are assigned an opportunity return in the cost-estimating procedure have been assigned a higher return than what is being realized by farmers in some cases.

Table 29 presents cost information for corn in terms of a residual return to land for an owner-operator, a residual return to labor and management for a cash renter, and a return to land from cash rent.

TABLE 29.—RESIDUAL RETURNS FOR CORN PRODUCTION, 1978

Item	Owner-operator	Cash renter
Value of production:		
Yield (bushels per planted acre)	101	101
Price (dollars per bushel)	2.10	2.10
Value (dollars per acre)	212	212
Residual returns (dollars):[1]		
Variable costs, less labor	86	86
Machinery ownership costs	32	32
General farm overhead costs	10	10
Cash rent	NA	NA
Real estate tax	11	NA
Subtotal	139	190
Labor and management:		
Allocated to owner-operator	26	NA
Residual to cash renter	NA	22
Total above costs	165	212
Residual return to land (percent):		
1978 land value ($1,269)	3.7	[2] 4.0
1973 land value ($618)	7.6	[2] 8.3
1968 land value ($441)	10.7	[2] 11.6
1958 land value ($255)	18.4	[2] 20.0

[1] Rounded to nearest dollar.
[2] Residual return to landowner from cash rent net of real estate tax.

Source: Data from table 7, this report.

NA—Not applicable.

An owner-operator corn producer would receive a 3.7-percent residual return to the current—1978—value of land after paying all operating expenses plus allocating $32 an acre for depreciation and $26 an acre for his labor and management. If the owner-operator invested in land 5, 10, or 20 years ago, the return to that investment would be 7.6, 10.7 and 18.4 percent, respectively. A residual return is shown for the cash renter's labor and management. The residual return to land in the cash-renter column is based on the cash rental rate and represents the return to the landowner receiving the cash rent. At a cash level of $62 per acre, which is the average for corn in 1978, the cash renter receives $22 per acre in returns to labor and management. This is $4 less than the $26 allocated for the owner-operator. Under the cash rent arrangement, labor and management receives a slightly lower return and land a slightly higher return.

It is not a matter of whether returns are sufficient to meet all costs, including a return to fixed resources in this case. They are. It is a matter of whether those returns will attract continued investment in agriculture. Cursory observation suggests that there are many investors anxious to invest in agriculture.

NONPOSTPONABLE AND POSTPONABLE COSTS

Another useful method for gaining additional insight about agriculture in relationship to production costs is to consider costs that are nonpostponable and those that are postponable. Some costs associated with input items used up in production of the commodity—seed, fertilizer, fuel, and machinery repairs—cannot be postponed. For the reporting format used in this report, these include all variable

cost items except all labor, the taxes and insurance items under the machinery ownership cost category, and the general farm overhead costs. The interest items may or may not represent a cost that cannot be postponed, depending on whether the individual producer operates with debt.

Some costs are attributable to annual wear and obsolescence of capital items. This is the replacement cost item under the machinery ownership cost category. An operator could postpone this cost in any particular year even though over several years an operator will spend this amount on the average to replace machinery. Farmers generally replace capital items in good years and postpone these expenditures in low-income years.

Another postponable cost category relates to cost based on opportunity returns. This includes operator labor and management (in which the operator supplies the labor and management) and an opportunity return on investment in land and machinery. There are no outlays for these items, but the returns are what provide family-living income. The need for family-living income cannot be postponed.

The tenure position of producers also will affect actual expenditures. A cash renter has to make a cash payment in order to use the land. A share renter has to give the landlord a portion of the crop; he has no cash payment, but receipts are less. A debt-free owner-operator has no cash obligations associated with land other than land taxes.

Table 30 analyzes the costs and returns in terms of postponable and nonpostponable costs for corn producers using 1978 costs and an average market price of $2.10 per bushel for corn. The indicator emphasized is a net cash return after meeting all nonpostponable costs. Four different situations are illustrated.

One: An owner-operator who has just purchased land and machinery.

Two: An owner-operator who is debt free.

Three: A cash renter who has just purchased machinery.

Four: A cash renter who owns machinery debt free.

TABLE 30.—CASH RETURNS FOR ALTERNATIVE TENURE AND DEBT SITUATIONS, CORN, 1978

Item	Owner-operator		Cash renter	
	New entrant	Established farmer	New entrant	Established farmer
Value of production:				
Yield (bushels per planted acre)	101	101	101	101
Price (dollars per bushel)	2.10	2.10	2.10	2.10
Value (dollars per acre)	212	212	212	212
Cash returns (dollars):				
Cash production costs	99	99	99	99
Principal and interest real estate debt [1]	89	NA	NA	NA
Principle and interest machinery debt [2]	103	NA	103	NA
Cash rent	NA	NA	62	62
Real estate taxes	11	11	NA	NA
Total	302	110	264	161
Net cash return	−90	102	−52	51

[1] 30-yr. amortized loan on 75 percent of 1978 land value at 8.5-percent interest.
[2] 4-yr. amortized loan on 80 percent of average per acre value of $415 for new machinery set at 9.1-percent interest.

Source: Data from table 7, this report and from authors.

NA=Not applicable.

The owner-operator who recently purchased land with 25-percent down and a new line of machinery with 20-percent down would lack $90 an acre of being able to meet cash production expenses and the principal

and interest payments on debt. The only way to enter under these conditions would be to have substantially more capital for downpayments or to reduce machinery costs by buying used equipment.

An established owner-operator with land and machinery paid for would receive a large cash return of $102 per acre. The two situations are the extremes, but illustrate the large difference in cash situations depending on level of debt.

The cash renter who has minimum equity in machinery and is in debt for the balance lacks $52 in meeting nonpostponable cash operation expenses, including principal and interest payments on debt. Since the cash renter who is debt free has to pay cash rent, an expense that the debt-free owner-operator does not have, the net cash return of $51 is only half the cash return of the owner-operator.

IMPLICATIONS

The examples illustrate some important considerations to be kept in mind when using cost of production estimates as a basis for judging the economic situation in agriculture. If total cost is greater than price, it does not mean that the commodity is produced and sold below cost of production. Rather, it is a general indication that resources on some farms are not receiving a return as high as has been assigned under the cost of production procedures.

The example shows that a corn price of $2.10 is sufficient to provide a 3.7-percent return to land after all other costs have been met—returns are sufficient to pay all variable costs, replace machinery, and provide a return to labor and management. Landowners purchasing land 5, 10, or even 20 years ago are receiving substantial returns to their investment. When this return is added to the gain from the appreciation in land values that has occurred, it is apparent why investment in land continues.

While a corn price of $2.10 provides a return to the current value of land equivalent to the return that land has earned on the average over many years, potential entrants can be blocked from entering if they have insufficient capital. It is also clear from the example why recent entrants with large debts may be on the brink of failure or even failing. They are facing a liquidity crisis which is a problem quite different from that of low returns to resources. If producers survive the liquidity crisis during debt repayment years, they are in a position to receive substantial returns to their investment in the longer run. Thus, a paradox. Agriculture is a good investment from the prospective return to resources. But, the level of investment required for an operation large enough to provide full-time labor and management opportunities strains the capital accumulation capabilities of that same individual.

An increase in price can ease the cash return crisis for the new entrant, but it is also obvious from the example that the established farmer who has a low debt load will have excess funds to invest. In many cases, such funds would be invested back into land. The landowner who purchased land several years ago is often in a position to bid a high price for an additional tract. If corn at $2.10 a bushel will earn a 3.7-percent return to land based on the current value, a landowner who purchased land 20 years ago can easily afford to add another tract. The total volume of business is larger in the long run and if land continues to appreciate, the addition to wealth offsets the fact that the interest may be greater than the return to land for a few years

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